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### THE MILITARY GEOGRAPHY OF MEXICO.

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BY CAPTAIN WILLIAM A. SHUNK, EIGHTH CAVALRY, U. S. ARMY.

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MILITARY geography may be said to embrace the collection and arrangement for convenient reference, of such information as would be desired by a government, or by a commanding general, about to enter upon an offensive campaign against the country under consideration. This information is mostly statistical, partly geographical, and, to some extent, speculative. The statistical information desired refers particularly to the warlike resources of the country in question, such as the number and condition of the population, the wealth of the country, its productions, communications, the strength of its army and navy, etc. The geographical information sought, except in regard to frontiers and coasts, refers almost exclusively to physical geography, and embraces such points as the climate of the country, its rivers, lakes, mountains, etc.

The speculative matters relate to strategical questions arising out of the configuration of frontier lines; the location of the obstacles, communications and fortifications of the country; the strength of the enemy's available forces; the lines on which they would probably operate; the routes by which they could most easily be attacked with the prospect of a decisive result, etc.

To treat our subject exhaustively would require far more space than can be assigned to this paper; consequently, none but the most salient points are noticed, and each of them very briefly.

#### EXTENT.

Mexico extends from the United States to Central America, and from the Gulf of Mexico and Caribbean Sea to the Pacific Ocean. In extreme limits it embraces about thirty degrees of longitude and eighteen degrees of latitude. Its superficial area is about 744,000 square miles, equal to about two and three-fourths times that of the State of Texas, or three and one-half times that of the German Empire.

The Republic comprises twenty-seven States, the Federal District and the Territory of Lower California. In the following table, for convenience of future reference, these are arranged in three groups, as follows: The *northern group* comprises the States of Sonora, Chihuahua, Coahuila, Nuevo Leon, Tamaulipas, Sinaloa, Durango, and the territory of Lower California; the *southeastern group* comprises Yucatan, Campeche, Tabasco and Chiapas; the *central group* comprises all the remaining States and the Federal District. The following table will be referred to later:

	Area sq. miles.	Population.
Northern group.....	407,787	1,222,357
Southeastern group.....	83,298	706,841
Central group .....	252,863	8,077,684
Total.....	743,948	10,006,882

#### BOUNDARIES.

The length of the northern frontier line of Mexico is about 1,900 miles, of which 1,000 miles is formed by the Rio Grande River; that of the eastern coast line is about 1,500 miles. The Pacific coast line, including that of the Gulf of California, is about 4,500 miles in length; the southern boundary about 500 miles.

Mexico's greatest length is about 2,000 miles; her greatest breadth is 750 miles. At the Isthmus of Tehuantepec her width is only 140 miles.

#### TOPOGRAPHY.

The Cordilleras extend from Central America through Mexico, following, in a general way, both its eastern and western coasts. Between these mountain chains lies the great central table-land, called the Plateau of Anahuac. This plateau embraces nearly three-fifths of the entire area of Mexico. The highest portion of the plateau is in the neighborhood of the City of Mexico, and may be said to culminate in four volcanic peaks, as follows:

<i>Name.</i>	<i>Height in feet.</i>
Popocatepetl.....	17,720
Iztaccihuatl.....	17,200
Orizaba.....	17,176
Nevada de Toluca.....	15,271

From this locality, where the general elevation is more than 7,000 feet above sea level, the plateau has a general inclination toward the north, gradually subsiding until, at El Paso, distant 1,100 miles, the elevation is only 3,800 feet. Low mountain ranges divide the great plateau into smaller ones, as follows:

<i>Name of Plateau.</i>	<i>Mean Elevation.</i>
Tenochtitlan.....	7,500
Puebla.....	7,000
Durango.....	5,550
Chihuahua.....	4,600
Oaxaca.....	4,500

There is no point of the great plateau from which mountains may not be seen in clear weather. They are all the same in appearance—abrupt, bleak, and without vegetation. By avoiding the mountains, the general surface will be found to be sufficiently even; and, according to HUMBOLDT, “there is a good natural carriage-road from the City of Mexico to Santa Fé, N. M., a distance of 1,400 miles, with only slight variations from the level.” This is practically the line of the Mexican Central Railroad.

No great valley traverses this plateau, nor are there many small ones. The mountains forming the western and southwestern border of the plateau slope abruptly toward the Pacific and the Gulf of California. Those on its eastern edge are equally abrupt at its southern extremity, but gradually subside as we follow the chain northward, and finally merge in the great plains along the Rio Grande. The great plateau can be most easily reached from the Gulf by the Passes of Orizaba and Jalapa, both of which may be entered by roads from Vera Cruz. It may also be reached by the Pass of Saltillo, about 500 miles from that of Jalapa. Mexico has been repeatedly invaded by the Jalapa Pass. In 1846, General TAYLOR penetrated by that of Saltillo; in 1862, the French penetrated by the Orizaba Pass.

Stated somewhat in detail, the routes of the most noted invasions have been as follows: CORTEZ used the route Vera Cruz, Jalapa, Tlascala, Otumba, Mexico; SCOTT followed the line Vera Cruz, Jalapa, Perote, Huamantla, Puebla, Rio Frio, Mexico; the French line was Vera Cruz, Soledad, Cordova, Orizaba, Esperanza, Puebla, Rio Frio, Mexico. There is now a railroad through each of the main passes from the coast to the capital, and one from Tampico to San Luis Potosi.

Between the foot of each of the great mountain chains, bounding the plateau, and the sea lies a strip of low, flat country called the *Tierras Calientes*, or *Hot Lands*. Along the western coast, they form a strip from thirty to seventy miles in width. They are more extensive along the eastern coast, where they include the greater part of the States of Tamaulipas, Vera Cruz, Tabasco and Yucatan.

The eastern coast of Mexico is low, flat and sandy, and is not indented by arms of the sea of commercial or military importance. But along this shore may be found many shallow sounds or inlets, almost entirely separated from the sea by low sandbars. There is not one good harbor on this coast. Those of Vera Cruz, Tampico and Tuxpan, which have the greatest strategical importance, are merely open roadsteads; they afford little or no protection from northers, which blow along this coast with great violence. Under such circumstances, vessels lying at anchor in those harbors are liable to be wrecked, and are often compelled to put to sea to avoid it. It appears that the best anchorage is at Anton Lizardo, near Vera Cruz, where the fleet conveying General Scott's army assembled before disembarking the troops to attack that city. Other harbors on the Gulf coast are those of Tabasco, Campeachy, Progreso, Sisal, etc.

On the Pacific coast good harbors are more numerous, that of Acapulco being one of the finest in the world, and those of Manzanillo, Mazatlan, San Blas, Guaymas and others being excellent. All these, and several others, are superior to the best on the eastern coast.

#### RIVERS.

The rivers of Mexico are, as a rule, small and unimportant. Some of them are several hundred miles in length, but few of them are navigable because of insufficient water, rapids, or for other reasons. The principal streams will be found in the following table:

<i>Name.</i>	<i>Length.</i>	<i>Distance Navigable.</i>
Rio de Santiago.....	540 miles.	.....
Rio de las Balzas.....	420 "	.....
Rio Yaqui.....	340 "	.....
Rio Conchos.....	340 "	.....
Rio Grijalva.....	340 "	.....
Rio Usumasinta.....	340 "	.....
Rio Panuco.....	290 "	*150 miles.
Rio Sinaloa.....	280 "	.....
Rio de Ures.....	210 "	.....
Rio de Culiacan.....	160 "	.....
Rio de Goatzacoalcos.....	112 "	25 miles.
Rio Tamesi.....	.....	50 "
Rio Tuxpan.....	.....	30 "

\* For light vessels only.



Thus we see that there is very little river navigation in Mexico. Owing to the physical formation of the country, there are no great river systems, nor is navigation possible excepting for a few miles from the sea, on account of the reasons above mentioned. The Mexican streams are most useful for purposes of irrigation.

#### LAKES.

The lakes of Mexico are rather numerous, especially in the north-central region of the great plateau. Most of them are extensive shallow lagoons, the remains of what were once large basins of water. Like the rivers, they are all small and of little value for the purposes of commerce or communication. The most considerable one is Lake Chapalla, in the State of Jalisco, which is about seventy miles in length and from ten to twenty in width. The Rio de Santiago flows through this lake from east to west. Many so-called lakes along the Gulf coast, such as the Laguna Madre, Laguna de Terminos, etc., are really arms from the sea.

Upon the whole, Mexico is poorly supplied with water, and, upon the great plateau, the supply has been steadily decreasing since the Spanish Conquest.

#### CLIMATE.

The four seasons are more or less distinctly marked in the northern portion of Mexico, but in central and southern Mexico there are only two seasons, viz: Summer, or the Rainy Season, which lasts from May to October, and Winter, or the Dry Season, which comprises the remainder of the year.

With reference to temperature, Mexico is divided into three zones, whose general direction is from north to south:

1. *The Tierras Calientes*, or Hot Lands, including the region along each coast lying between the sea and an elevation of 2,500 feet. Here the usual temperature ranges from 70° to 85°. But near the sea level, consequently at all seaports, the summer temperature frequently rises higher than 100°; and this is often accompanied by yellow fever. During the winter months the average temperature is only a few degrees lower than in the summer—excepting when northers blow, when the temperature usually falls from 20° to 40° in a few hours.

2. *The Tierras Templadas*, or Temperate Lands, lying between 2,500 and 5,000 feet above sea-level. In this region the ordinary daily temperature ranges in the immediate vicinity of 65° or 70° throughout the year; and it is said that there is no more healthful or pleasant climate than this. The climate of the Tierra Caliente on

the contrary, is one of the worst and most unhealthful on the face of the earth.

Each of these regions comprises about one-eighth of the total area of Mexico. Generally speaking, they may be said to form zones parallel to the nearest coast. But, in some cases, they penetrate far within the central mountain system along the valleys of streams. This occurs in Puebla, Oaxaca, Michoacan, Jalisco and in other states.

3. *The Tierras Frias*, or Cold Regions, include portions of the surface more than 5,000 feet above sea-level. This division embraces three-fourths of the area of Mexico. Here, the average yearly temperature ranges from  $55^{\circ}$  to  $62^{\circ}$ ; and the extremes of  $45^{\circ}$  and  $80^{\circ}$  are seldom exceeded below 8,000 feet altitude. The climate is cold as compared with that of the coast country; but not as compared with that of any part of the United States, excepting portions of Florida and the Gulf Coast. The *Tierras Frias* are sufficiently salubrious up to an elevation of about 8,000 feet. Above this altitude the climate is very disagreeable, principally on account of the heavy winds which raise great clouds of dust on the plains; and also because of the want of moisture in the atmosphere, which has very unpleasant effects and causes much suffering to those not acclimated. During the rainy season, which, in these elevated regions, lasts from June to September, the air is pleasant, but many of the roads become impassable quagmires. During the dry season, marching is equally uncomfortable on account of the dust which is said to speedily reach a depth of several inches and to fill the air. The nights, at such elevations are invariably very cold. And, during almost the whole year, the sky of Central and Northern Mexico is said to be clear, except near the summits of the highest mountains.

We see, therefore, that Mexico has every variety of climate from tropical heat to arctic cold: and can probably produce every plant known to man. But it should be noted that the climate of any particular place depends far more on its elevation than on its latitude.

#### FOOD PRODUCTS.

In the *Tierras Calientes* the entire surface, excepting certain small areas of sand, is covered with a very luxuriant vegetation. Oranges, bananas, rice, hemp and all kinds of tropical plants are found in abundance. In the *Tierras Templadas*, coffee, sugar, tobacco, cotton and other plants are cultivated. In the *Tierras Frias*, wheat, corn, barley and other products of temperate latitudes are found; the maguery is, however, the principal object of cultivation. Wheat is cultivated with some success in portions of all but five of the Mexi-

can states. Corn, frijoles, or brown beans, and Chili Colorado, however, constitute the subsistence of nine-tenths of the population, and are extensively produced in every state.

On the plateau, north of the 20th parallel, crops depend upon irrigation. South of this, the rain-fall is often sufficient, but cannot always be depended upon. More than half the Mexican farming lands depend upon irrigation; and it is a singular fact that the condition of the country in this respect was far more flourishing under the Aztecs than it has ever been since.

Two crops of either wheat or corn are grown on the same ground every year in various parts of Mexico, and in the States of Vera Cruz and Tabasco on the Gulf coast, Mexico on the plateau, and in Jalisco, Oaxaca and Guerrero on the Pacific coast, three crops of corn are cultivated on the same ground in a single year. The yield per acre per annum is considerably greater than in the United States. All this is done with the implements of the Aztecs, which, it may be added, were also those of the ancient Egyptians. American machinery has been introduced, but, as yet, meets with very little favor.

Mexico, notwithstanding her small area under cultivation and her primitive methods, produces annually one-ninth as much corn as the United States, but only one-fortieth as much wheat. All authorities seem to think that the annual production will soon be much greater than at present.

A few items are here given to afford an idea of the annual Mexican food production:

<i>Article.</i>	<i>Quantity per Annum.</i>
Corn.....	200,000,000 bushels.
Wheat.....	12,000,000 "
Barley.....	10,000,000 "
Potatoes.....	4,000,000 "
Frijoles .....	508,000,000 pounds.
Sugar.....	154,000,000 "
Rice.....	33,000,000 "
Coffee.....	17,500,000 "

Upon the whole, Mexican agriculture is said to be in a very backward condition. A large part of its surface can never be brought under cultivation. A large portion of the area under cultivation gives very indifferent results, but the remainder is equal in fertility to any country in the world. In other words, it may be said that Mexico is composed of regions of great fertility, separated by mountain ranges or by tracts of very unproductive country, which, in many cases, are simply deserts. Without attempting to point out these more productive localities, it may be sufficient to observe that all the great cities of the interior are located in such

regions, excepting, however, Zacatecas and several smaller towns, which owe their existence to mines in their vicinity. The portions of the country not suitable for agricultural purposes are, in general, more or less suitable for grazing, and support thousands of ponies, cattle, sheep, goats and other animals.

#### DISTRIBUTION OF THE POPULATION.

It does not appear that any complete or exact census of the Mexican population has ever been taken. According to the most reliable estimates, it numbers more than ten millions. More than half the whole number are Indians; the Whites number more than one million; the Mestizoes are still more numerous; the Negroes number from ten to fifteen thousand; the remainder of the population is composed of various mixtures of the races above named.

Referring to the table on page 118, we see that the northern group of States, containing more than one-half the area of Mexico, contains less than one-ninth of the population, or about three persons to each square mile. It should also be noted that the central group, containing less than one-third of the total area, contains more than four-fifths of the population. This central region must be regarded as the "heart of the country," not only in geographical position, but also in population, wealth, productions, manufactures; in fact, in everything but the grazing and mining interests. And, in order that any operations against Mexico may be of a decisive character, they must include the conquest and occupation of this region, the only portion of that country which furnishes conditions favorable to the operations of large modern armies, viz: ample means of subsistence, good communications and a healthful climate.

#### CONDITION OF THE PEOPLE.

The great mass of the people are extremely poor and densely ignorant as well as improvident, the natural result of their treatment by the Spanish conquerors and the successors of the latter. Under their government, almost the entire population was absolutely without any education whatever; a state of things which suited their traditional policy, European as well as American, and which they took great pains to preserve. A far more enlightened policy has lately been pursued by the Government of the Republic and education, instead of ignorance, is now compulsory. Yet even now, notwithstanding all the efforts of the Government, it is said to be doubtful whether one-third of the people can even read and write. The Indian population has been very little affected by nearly four cen-

turies of contact with the white race. They are to-day very similar to their Aztec forefathers in manners, customs, mode of life—in everything but religion. They follow the same pursuits and use exactly the same implements as the Aztecs. The latter, indeed, were better farmers; they made a larger area productive and supported a denser population.

#### MILITARY CHARACTER.

Persons familiar with Mexican history, remembering that Mexican armies have repeatedly been defeated by greatly inferior forces of Spaniards, Americans, and Frenchmen, will probably be inclined to regard the Mexican soldier as decidedly inferior to the soldier of almost any civilized country.

There is much justification in history for such an opinion. However, before accepting this conclusion as final, several points should be taken into consideration, among them the following:

1. In the encounters referred to, the Mexican forces were invariably poorly instructed, poorly armed and destitute of good officers in the lower grades; disadvantages that could not be equalized by the efforts of a few able men in high command. In future wars, this state of things will not obtain in their regular army, nor to so great an extent as formerly in any part of their forces.

2. Their want of good communications and the general poverty of the country have been such that their resources could not be made available upon a threatened line in any reasonable length of time. This condition has almost completely disappeared.

3. The Mexican (soldier) has been accustomed to handle and use small arms from childhood, and he often displays the same recklessness and individual prowess that we are familiar with among our native Indians. In physical bravery and contempt for danger, he will probably be found equal to any soldier he may be called upon to meet. Numerous instances show that these people, bravely and skillfully led, fight well; poorly led, they are easily stampeded—in other words, with such troops in combat, very much depends upon their officers.

4. The true point of inferiority of the Mexican soldier will be found to consist in his dense ignorance. But compulsory education is correcting this evil and will in time eradicate it. History is full of examples showing the great superiority of armies composed of intelligent and educated individuals. Such forces are said to possess *moral power*; and NAPOLEON himself regarded this as far superior to mere physical force. It is also held that recent improvements in fire-arms have still further increased the value of moral power.

5. The marching power of Mexican troops has been commented upon by many officers who have visited that country; and, if it has been correctly reported, it far exceeds that of all other armies. It is asserted that Mexican infantry, in small bodies of 2,000 or 3,000 men, has repeatedly marched about fifty miles a day for several consecutive days. While this can scarcely admit of belief, it can not be doubted that they are accustomed to march their troops with far greater rapidity than is customary in any other army.

#### MILITARY STRENGTH OF MEXICO.

The Mexican troops immediately available, in case of war, are as follows:

1. The regular army consisting of about 1,700 officers and about 30,000 men. This force comprises thirteen regiments of cavalry, twenty-nine battalions of infantry, four battalions of artillery, besides some engineers, all armed with improved weapons.

2. The Rural Guard, about 3,000 strong, said to be one of the finest bodies of light cavalry in existence.

3. The local troops of the several states numbering in all about 3,000 men. Total about 2,000 officers and 36,000 men.

This force, it is claimed, could be raised in a few weeks to about 3,700 officers, 132,000 infantry, 25,000 cavalry and about 8,000 artillery and 2,000 engineers, all more or less instructed. This would still leave a reserve of about 500,000 uninstructed and unorganized men.

Mexico maintains a military school at Chapultepec. It is modeled, to a considerable extent, after West Point, and graduates thirty or more cadets yearly.

No information is available from which the condition of the Mexican general staff can be learned. From various circumstances, it is suspected that it is not in a very high state of efficiency; among these is the fact that their troops are frequently compelled, even in time of peace, to provide their own subsistence. It is also notorious that wagon transportation is and always has been almost entirely undeveloped in that country; and that their railways constitute the only efficient means of transportation they have ever had, their next best reliance being pack-animals—a state of things that must hamper the most efficient staff in any army.

#### CITIES AND TOWNS.

Nearly the whole Mexican population lives in cities, towns or villages. Detached houses are rarely seen in any part of that country. Even in the most densely populated districts, travelers report

riding from town to town without observing a house. Except in the Tierras Calientes, the houses are usually built of stone or adobe, and are very strong for defense. Nothing smaller than a field-gun will have any effect on the average Mexican house, and it is almost impossible to set one afire.

Mexico City, the capital and metropolis, contains about 300,000 people, Leon 120,000, Guadalajara and Puebla 75,000 to 80,000 each, sixteen other cities range from 15,000 to 60,000 each. Vera Cruz has 20,000 and Tampico 7,000 inhabitants. All the Rio Grande towns and all the seaports (except Merida 40,000 and Matamoras 15,000) are still smaller places.

#### COMMUNICATIONS.

The want of means for easy and rapid communication has always been a great stumbling-block in the way of Mexican progress. But improvement in this respect has been very rapid in recent years; and there are now several lines of railroad completed and others in process of construction. At present, the great cities of the interior are connected with one another and with the seaports of Vera Cruz and Tampico by quite a network of railroads. The Rio Grande towns of Laredo, Eagle Pass and El Paso are connected by rail with the above system and also with those of the United States; and it is expected that the Pacific ports of Acapulco, San Blas, Mazatlan and others can soon be reached in the same way.

While Mexican railroads, speaking generally, may not be first-class in every respect, they doubtless would be able to concentrate any available force at or near any point of the frontier that is likely to be seriously threatened before any great progress could be made by an enemy.

The following are the principal lines:

I. The Mexican Central, from El Paso, Texas, to the City of Mexico, 1,225 miles, with branches as follows:

<i>From</i>	<i>To</i>	<i>Miles.</i>
*Irapuato.....	Guadalajara.....	160
Aguas Calientes..	Tampico.....	415
Silao.....	Guanajuato.....	15
Tula.....	Pachuca.....	44

II. The Mexican International, from Eagle Pass, Texas, to Torreon Junction, where it connects with the Mexican Central:

<i>From</i>	<i>To</i>	<i>Miles.</i>
Eagle Pass.....	Torreon Junction.....	383
Eagle Pass.....	Mexico.....	1091

#### BRANCHES.

Torreon.....	Durango.....	157
Trevino.....	Tampico.....	387

\*To be continued to San Blas.

## III. The Mexican National, narrow (36 inch) gauge:

<i>From</i>	<i>To</i>	<i>Miles.</i>
Laredo, Texas.....	Mexico.....	840

## BRANCHES.

Mexico.....	El Salto.....	39
† Acambaro.....	Patzcuaro.....	96
Laredo .....	Corpus Christi ( U. S.).....	161
‡ Matamoras .....	San Miguel .....	75

## IV. The Mexican Railroad:

<i>From</i>	<i>To</i>	<i>Miles.</i>
Vera Cruz.....	Mexico.....	263

## BRANCH.

Apizaco.....	Puebla.....	29
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## V. The Mexican Inter-Oceanic, narrow (36-inch) gauge:

<i>From</i>	<i>To</i>	<i>Miles.</i>
Vera Cruz.....	Mexico.....	340

## BRANCHES.

Mexico.....	Jojutla .....	122
Puebla.....	Chietla.....	64

## VI. The Sinaloa and Durango:

<i>From</i>	<i>To</i>	<i>Miles.</i>
¶ Altata ( Pacific port).....	Culiacan.....	60

## VII. The Sonora Railroad:

<i>From</i>	<i>To</i>	<i>Miles.</i>
‡ Nogales, Arizona.....	Guaymas.....	265

The Eagle Pass and Laredo lines are connected by cross-lines from Sabinas to Lampazos, and from Jaral to Saltillo (incomplete).

It should be borne in mind that the railroads are the only good communications in Mexico. There are no great paved turnpikes or highways in the country, and the river navigation amounts practically to nothing. About 7,000 miles of railway are now in operation in Mexico.

## FORTRESSES.

Permanent works have been constructed at the following places: Vera Cruz, Perote, Puebla, Mexico, Acapulco and Mazatlan. The fortifications and guns of all these places are obsolete.

## POSSIBLE LINES OF OPERATIONS AGAINST MEXICO.

A glance at the map shows us that there are, at present, several routes by which an American army might enter Mexico in case of

† To be continued to Manzanillo, 440 miles.

‡ To be continued to Monterey, 150 miles.

|| This branch to be continued to Acapulco, 200 miles.

¶ This line to connect with the International.

‡ Connects at Benson with Southern Pacific system.



war with that country. We might base ourselves on the Rio Grande and invade the country by way of El Paso, Eagle Pass or Laredo; or we might establish ourselves at Vera Cruz or Tampico on the Gulf, or at one of the Pacific ports south of Guaymas, and move thence into the interior.

But a little reflection will show us that distance alone puts the Pacific Coast out of the question, unless for the purpose of making diversions to assist the principal operations. It may also be doubted whether more than this would be attempted by the El Paso route.

It is assumed that any operations against Mexico must depend for decisive success upon at least the capture and occupation of Mexico City, which is not only the capital and metropolis but also the most important strategical point in the whole country, from which roads radiate in every direction. It is not assumed that this would end a war; but it might do so, and it would be a great step in that direction in any case.

The following table gives the lengths of the different lines mentioned above as possible lines of operations against Mexico:

From	To	Miles.
El Paso.....	Mexico.....	1,225
Eagle Pass (via Torreon).....	".....	1,091
Laredo.....	".....	840
Tampico (via San Luis Potosi).....	".....	637
Vera Cruz (via Mexican railroad).....	".....	263
Vera Cruz (the Inter-Oceanic).....	".....	340
Laredo.....	San Luis Potosi.....	478
Tampico.....	".....	275

These figures are very significant; and it would seem that they are sufficient in themselves to settle the question of the most practicable route.

Unless Mexico had an ally who could control the sea, it would seem that the main army should be landed at or near Vera Cruz in such strength as to be able to advance at once against the capital, following either the general line of the Mexican or that of the Inter-Oceanic railroad. With a very great superiority, it *might* be found judicious to advance by both lines; for experience shows that though generally disastrous, yet *under proper circumstances*, this method of operating (on exterior or converging lines) is likely to succeed. The two lines in question are separated by lofty and rugged mountains, and reinforcement across them would be impossible.

Crossing the Tierra Caliente, the depots and an intrenched camp should be established at from thirty to fifty miles from Vera Cruz, in a suitable place, high enough above the sea to be free from yellow fever and strong enough to afford shelter to the army in case of re-

verse. No time should be unnecessarily lost in this work, but the army, as soon as it could be concentrated in sufficient strength, should move rapidly forward. This part of the country abounds in strong positions, and would probably be the scene of one or more heavy battles.

The army should be sufficiently strong to remain superior to the enemy after making occasional detachments, more particularly a very large detachment to besiege or mask the city of Puebla. This point is essential to the rapid success of the invasion; and if the army has not this strength, the campaign, at this point, would come to a standstill and would become a struggle for the possession of Puebla, or some other special point. This would give the Mexicans time to recover from their previous defeats, improve their defenses at the capital, provision that place for a siege, raise new forces, etc. A siege-train should accompany the army to demolish the thick stone walls of churches and other buildings upon which field artillery would not make much impression.

It is proper to say that either railroad that might be selected passes through several tunnels, across ravines or cañons of great depth, along the brinks of several precipices, etc., and at several points would be very easily disabled and very difficult to repair; and it might not be a very safe reliance for the supply of a great army. We may also observe that it would undoubtedly be in running order most of the time (in our own war, bridges destroyed were rebuilt in a few days) and, also, that an old carriage road follows nearly the same course as either railroad about half way to the capital. After securing San Marcos, the intersection of the two roads, it would, perhaps, be possible to control either or both lines to Vera Cruz. The next operation would be undertaken to secure Puebla; and the next to gain possession of the capital, which might end the war. If not, then the army must leave forces to hold Puebla, Mexico City and important points of the railroad line to Vera Cruz, and must pursue and destroy the enemy's forces which would, no doubt, be found in the fertile districts to the north and west.

As regards the choice of a line for operating against Mexico, it may be well to examine the opinions of Generals SCOTT and TAYLOR—probably the most eminent authorities on this subject. Early in 1846 General SCOTT was requested to proceed to the Rio Grande, supersede TAYLOR, and invade Mexico. But he demurred, for several reasons, among them that "he did not consider the Rio Grande frontier the right basis for offensive operations against Mexico." He suggested that he be allowed, instead, to land at Vera Cruz, ad-

vance from that point, and "conquer a peace in the Halls of the Montezumas," as he termed it. For the present, the Administration would not consent to this.

Shortly after this occurred the victories of Palo Alto and Resaca de la Palma, which brought General TAYLOR at once into great prominence. From that time, he was persistently urged from Washington to adopt the plan rejected by SCOTT, and finally, against his own judgment, he did move forward, capturing Monterey (September 20th), Saltillo (November 16th), and winning the battle of Buena Vista (February 23, 1847). SCOTT says that TAYLOR, by these operations, "became *planted*, as it was impracticable—no matter with what force—to reach any vital part of Mexico by that route."

On the 16th of the following June, TAYLOR wrote to the War Department from Monterey in regard to an advance upon San Luis Potosi, which he was urged to make, as follows: "But I may be permitted to question the utility of moving, at a very heavy expense, over an extremely long line, and having no communication with the main column operating from Vera Cruz. If I were called upon to make a suggestion on the general subject of operations against Mexico, it would certainly be to hold in this quarter a defensive line and throw all the remaining troops into the other column."

The opinions of both SCOTT and TAYLOR, therefore, were strongly in favor of the Vera Cruz route. Railroads did not then exist in Mexico; now there is a railroad available along each line. It seems to us, however, that their relative merits are about the same as before. But railroads have, at least, made a decisive campaign, based on the Rio Grande, a possibility—which it never was without them.

It is not intended to discuss the Mexican War, but attention is invited to the following points:

1. The Mexicans held, upon the general theater, the advantage of interior lines, and they turned it to account. The same men who fought TAYLOR at Buena Vista in February, fought SCOTT at Cerro Gordo in April. It would seem impossible to devise a plan of campaign that will deprive Mexico of the advantage of interior lines, and her railroads have increased many fold the value of that advantage.

2. The American forces were greatly inferior in numbers in every engagement. At Buena Vista, TAYLOR had to encounter 18,000 men with 4,800; at Mexico City, SCOTT was obliged to attack 30,000 men behind strong works with only 10,000. It is true that both generals were successful, but no such risks should be necessary—the invaders should be superior in numbers.

3. Neither SCOTT nor TAYLOR could keep their communications free from the enemy, and every convoy required a considerable escort.

In many respects all accounts (American and Mexican) of the operations of this war read more like romance than history. SCOTT, TAYLOR, WOOL, DONIPHAN and KEARNEY, each with a small force, pushed hundreds of miles into unknown regions, attacked and dispersed vastly superior forces, and rapidly made themselves masters of the whole country.

Such operations can scarcely be judged by ordinary standards, but present conditions are very different from those of 1846-7, and Mexico is now far better able to take care of herself.

(a) During that contest ambitious chiefs were unable to lay aside their rivalries, and revolutions were attempted while the war was in progress. The government, which was then so unstable, is now virtually an empire, President DIAZ having held his present office for many years, occasionally going through the form of a réélection.

(b) History shows that the Spanish race takes easily and naturally to guerilla warfare, and a country made to order for the purpose could not be more suitable for partisan operations than Mexico. These facts cut little or no figure in 1846-7, good luck of which we can scarcely expect a repetition.

(c) The small armies of that day subsisted on the country and, while ammunition lasted, could survive the temporary loss of communications; but the next invading armies will be of great strength—far more numerous than those of the former contest. They will of course make requisitions, but it will be impossible to subsist long by this means alone. The communications must therefore be kept open, and this will require many small and a few large detachments, the total strength of which will doubtless number many thousands.

If the main army operate by the Vera Cruz route, then along the northern frontier only diversions by comparatively small forces should be attempted. They should begin shortly before the main army begins its advance, and should have one of two results, either—

(1) To induce the enemy to make large detachments from the main army, thus assisting the principal operation; or

(2) To secure the capture of some or all the important places near the frontier, which would have a good moral effect, although it would contribute very little toward decisive success.

If there still remained a sufficient force for the purpose, after

sending to Vera Cruz all the troops that were thought necessary to operate successfully on that line, it might be well to endeavor to capture Saltillo and Tampico, thereby reducing the enemy's resources, keeping the force employed, and facilitating a junction with the main army whenever that should become desirable.

In our contest with Mexico the great plateau could not have been reached without control of the sea, but railroads have now made this possible. With no fleet or merchant marine worthy of mention, and no great seaports, Mexico would seem to offer poor opportunities for naval exploits; and yet, by gaining an advantageous base for the army, a superior navy would simplify its operations in a remarkable manner. It may be fairly questioned whether control of the sea would not be quite as important in a war against Mexico and possible allies, as in any contest in which we are likely to become involved. This may be illustrated by considering what would probably be the course of a campaign against Mexico and an ally superior to us at sea.

If it were not practicable to use the sea in our operations, the problem would assume a grave aspect. The choice of a line of operations would be made from among the railroads leading into Mexico from the Rio Grande. The first effort of the main army would probably consist in a movement upon Monterey and Saltillo. Eagle Pass or Laredo would be the starting point. A choice would, no doubt, be largely influenced by topographical considerations. The Laredo route is more direct; but the Eagle Pass route favors an attack in a more effective direction and would probably be preferred at first, for this reason, and because it is a standard-gauge road, while the Laredo road is narrow-gauge, and especially because points thereon such as Trevino and Jaral must be occupied to protect the flank while moving upon Monterey and Saltillo.

Selecting the Eagle Pass route, the army would probably advance to Jaral. Holding that place by means of a detachment, it could then advance from Trevino upon Monterey and thence upon Saltillo. The Mexicans observing these movements would probably evacuate the country from the Rio Grande to Monterey; and concentrating all their available forces, would either fight a battle in defense of Monterey or Saltillo, or would retire without much fighting, beyond the desert, using both the railroad line to Tampico and that to San Luis Potosi for the purpose. It is plain that Mexico could not better serve our interests than by putting forth her whole strength in this region; just as the Russians in 1812 might have served *NAPOLÉON* by fighting him on the Vistula, instead of which they preferred to retire among

their deserts. But the probability is that the Mexicans would evacuate this region without severe fighting, destroying the railroads, and the water tanks in the Saltillo desert. In any event, it must be occupied; and an intrenched camp would probably be formed at Monterey or Saltillo which would be occupied by a strong force to guard against an attack from Tampico and to give security to a further advance. The strategic value of this locality would be very considerable.

It would next be necessary to establish the army in the fertile and populous districts of the Great Central Plateau. The point to be ultimately secured is San Luis Potosi, as being the first important point south of the desert, on our direct line; by which line it is 240 miles from Saltillo. In the entire distance, water, in sufficient quantities for a force of some size, is found only in artificial tanks, easily destroyed by the retreating enemy. If the railroad could supply with water, as well as other necessities, a force large enough to attack San Luis Potosi with a reasonable prospect of success, the attempt should, of course, be made to advance directly. But, as this is out of the question, the army must pass to that point either by following the railroad lines to the east of the desert or by following those to the west of it.

The distances are as follows:

From Monterey to Tampico.....	321 miles
From Tampico to S. Luis Potosi .....	275 "
Total via Tampico. ....	596 miles
From Trevino to Torreon.....	160 miles
From Torreon to Aguas Calientes.....	342 "
From A. Calientes to S. Luis Potosi.....	140 "
Total via Torreon. ....	642 miles

The Tampico line is somewhat shorter; but the Torreon line passes through a far less barren country and is entirely secure from the enterprises of an allied army that might land at Tampico and interrupt the communications, should the attempt be made by the eastern line to reach San Luis Potosi.

By whichever line the attempt be made, the whole strength of Mexico will certainly be encountered. Her railroads furnish ample means for concentrating all her forces at any point between Tampico and Aguas Calientes or between the latter place and Torreon. This is her time to beat back the invading army, if she can do this at all; and the greatest battle of a war begun under such conditions might be expected before the Americans would be allowed to get possession of their objective, San Luis Potosi.

The distance from Eagle Pass to Torreon is 383 miles; to Zacatecas, 651 miles; thus the Americans, guarding a line 600 or 700 miles in length, would need vastly superior forces in order to put equal numbers in line of battle. Torreon Junction is a point of much strategical importance and, when captured, an intrenched camp would, no doubt, be established there. Detachments would occupy Chihuahua and Durango, and the resources of the country would be secured, while Mexico would be cut off from her northwestern States—about one-fourth of her area.

Under the supposed conditions, it has not been assumed that Mexico would fight a pitched battle north of Zacatecas, because guerillas, operating on the American communications, would compel them to detach so many men that their superiority of numbers would rapidly disappear. But, it has been assumed, that the great battle would be fought in defense of Aguas Calientes, because, while that point was in their possession, the Americans would not dare attempt the march on San Luis Potosi. If the Mexicans win the battle, the American campaign is checked until reinforcements enable them to resume it. If the Americans win, they establish themselves at San Luis Potosi, thus shortening their line of communications by about 250 miles, form an intrenched camp, repair the railroad in their rear, and are now prepared to move upon the capital from their new temporary base, meanwhile guarding a line 475 miles in length—a line about as long as SHERMAN's line from Louisville to Atlanta. But the capital is still distant 365 miles.

The Mexican National Railroad is a narrow gauge road, while the other lines are of the standard gauge. The above change of base would be greatly facilitated if the two roads were of the same gauge, and this change could be made in a few days, as we know by experience. (The P., Ft. W. & C. R. R., was changed in a single day from narrow to ordinary gauge, and every regular train ran on time as usual).

With the principal army thus established at San Luis Potosi (or perhaps at Aguas Calientes), the war, so far as decisive results are concerned, has really only begun. It has progressed only as far as an European war has done when one army has crossed the frontier and has gained the first action; the army has only reached a position from which a vital part may possibly be struck.

The next operations would probably have in view the capture of Celaya Junction which would effectually isolate the capital from the north and west. But when the army finally arrived before the capital, there would be behind it a line of communications 840 miles in



length. This would have to be guarded against the efforts of a hostile population, greatly addicted to guerilla warfare. The city itself would be defended by an army behind powerful works. And an ally could land troops at Vera Cruz and send them by rail to their assistance.

To give an idea of the force necessary to guard such a line, 840 miles in length, let us compare the supposed situation with the very similar one on a much smaller scale of SHERMAN before Atlanta.\* "On the 31st of August, 1864, SHERMAN had at the front about 72,000 men and in his rear about 68,000. [These numbers represent combatants only. He had besides, in his rear, an army of civilian *employés* engaged in running his trains and keeping the track in repair.] His main line, Louisville, Nashville, Stevenson, Chattanooga, the Chattahoochee Bridge, Red Oak, was about 480 miles. \* \* \* It is worthy of note that the portion of the line north of Chattanooga was held by about 533 men per *étape* [distance of fifteen miles], while that from Chattanooga to Red Oak required a force per *étape* of 3,500 men."

When we consider the force necessary to conduct an operation such as the above, and estimate the strength that would necessarily be employed in guarding the line of communications, enforcing requisitions, checking partisan operations, besieging or garrisoning important places such as Monterey, Saltillo, Torreon Junction, Aguas Calientes, San Luis Potosi, Celaya, and many others, quelling uprisings, the difficulties of supply so far from the base, etc., then we begin to appreciate the magnitude of such an undertaking in case we do not control the sea.

In fact, if Mexico, in the case supposed, should make a respectable resistance, according to the numbers of her population and the advantages of her topography, the conquest of that country by the overland line of operations (and without the use of the sea) would constitute a task whose magnitude would astonish some very well informed persons. And, even with control of the sea, another Mexican war will bear only a faint resemblance to the war of 1846-7 so far as the scale of the operations is concerned.

\*BIGELOW, pp. 85 and 86.











## THE CARBINE—HOW IT SHOULD BE CARRIED MOUNTED.

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BY CAPTAIN JOHN PITCHER, FIRST CAVALRY, U. S. ARMY.

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THE cavalry carbine as originally constructed was a comparatively simple and coarse weapon, which required no great care or attention to keep it in fair condition, but it has been gradually improved and refined, until it has become almost as accurate and effective a weapon as the infantry rifle. The method of carrying it on horseback, however, has changed but little within the last thirty years. According to this method, the entire weight of the carbine is supposed to be supported by the sling-belt, which passes over the left shoulder of the trooper, and the muzzle of the piece is simply steadied by the carbine boot, which is attached to the quarter strap ring of the saddle, on the right side of the horse.

The boot was originally about two inches in length and just large enough to permit the barrel to pass through as far as the top of the stock. This boot has gradually grown longer and longer until now it is about twelve inches in length, and is held in place by two straps, one attached to the quarter strap ring and the other to the cantle of the saddle. While this increase in the length of the boot has been a decided improvement, it still fails to protect the carbine or afford a convenient method of carrying it.

When I first joined the service troop commanders were constantly reproving their men for permitting the weight of the carbine to rest in the boot, but it was almost impossible to prevent them from doing so. With the increase in the length of the boot, the objection to this has apparently disappeared, and now, I believe that with but few exceptions, troop commanders permit their men to rest the entire weight of the carbine in the boot, but still require them to keep the carbine fastened to the sling-belt, thus attaching the man to the saddle, very much after the manner suggested by DERBY many years ago.



The objections to the present system are many, and one has but to watch a troop mount, or to inspect their carbines after but a short march, in order to see at once what some of these objections are. In mounting you will frequently see a man land in his saddle with the carbine underneath him—a most uncomfortable position I can assure you, for I have tried it myself, and this is an accident which is liable to happen to the oldest soldier. If he escapes this accident when he lands in the saddle, he is liable to poke the horse in the back with the muzzle of his carbine, and thereby frequently starts a bucking match, which results in the carbine being thrown violently into its place on the right side, and then flopping around until the horse is quieted or until the man dismounts, to prevent further trouble.

A short time since, at Fort Custer, I saw a man thrown from his horse, and for a few seconds he hung suspended in the air by his sling-belt, while the horse was kicking at him viciously; finally, something broke and they parted company. Now, it requires but one experience of this kind to render a man very chary of attaching himself to the saddle by means of the sling-belt, and as this incident was witnessed by all the cavalry command at Custer, I have no doubt it had a decided influence upon all who saw it. The fact that a man is attached to the horse in any way, so that he cannot instantly throw himself clear of the saddle in case of accident, is apt to render him a timid and cautious rider.

These are some of the objections to the present system or method of carrying the carbine, so far as the trooper is concerned. Now, as to the effect upon the carbine itself. An inspection of the arms of a troop at the end of a comparatively short march, will show the carbines looking as if they had been through a long and hard campaign. The barrels, towards the muzzle, will be as bright as if polished with emery cloth, and badly nicked and battered from striking the spur and heel of the trooper's boot. The rear sights become loose and are frequently bent out of shape. The stocks are badly battered and worn by contact with the bar of the sling swivel. In fact, they are so badly used up that nothing but a trip to some arsenal, for general repairs, will ever put them in decent shape again. Men lose faith in their weapons when they get in this condition, and frequently it is impossible to make them believe that they are still accurate and effective guns; and really in many cases they are not.

If it be conceded that it is not necessary for the trooper to support the weight of the carbine, and that there is no objection to attaching it to the saddle, the remedy for all these troubles is a very

simple one, and one that is well known to all frontiersmen and to the Ordnance Department. This consists in substituting a long boot, or scabbard about twenty-six inches in length, for the present short boot; this scabbard to be fastened to the saddle by two straps, one from the pommel and the other from the cantle, the scabbard passing under the leg of the trooper. The butt of the piece should be carried to the front, the muzzle to the rear, the barrel inclining downward at an angle of about thirty degrees. The carbine can thus be carried on either side of the horse and is held perfectly steady by the leg of the trooper. The use of this boot or scabbard gives the trooper perfectly free use of his arms, unincumbered by a dangling carbine, and will enable him to use either saber or revolver with much greater effect, and it also affords the carbine the most perfect protection possible.

About two years ago a number of such boots were made by the Ordnance Department and sent out for trial. Twenty-five of them were sent to Troop "G" of the First Cavalry, and I was informed by the troop commander, Captain WAINWRIGHT, that he had given them a thorough trial and found them satisfactory in every respect and a great improvement on the old boot. The only change which he suggested was that the lower end should be left open and partly open, so that neither rain nor dust would accumulate in the scabbard.

Now that we are about to receive a new magazine carbine, which will naturally be a little more complicated and delicate than our present weapon, it is a matter of the greatest importance that we should be provided with the best possible means of carrying it, and it is to be hoped that the Ordnance Department will at once begin the manufacture of a boot similar to the one they have already submitted for trial, but suitable for carrying the new carbine. The saving in the cost of repairs to carbines by the use of this boot will more than justify the slight additional cost of the boot, if such there be.

In the December number of the *Cavalry Service Journal*, Lieutenant SMITH of the Tenth Cavalry, has an interesting article on "Methods of Carrying the Carbine Mounted," in which he gives us a description of the methods used by the cavalry in the armies of England, France, Germany and Russia, and from a theoretical point of view, advocates the method used by the French. By this method the carbine is slung across the trooper's back by a strap similar to the one on our infantry rifle. He also comments on our present system, setting forth many of its disadvantages, and I entirely agree with him in all the objections which he names. I think, however, that Lieutenant SMITH is in error about one or two points in his

article. He starts out with the supposition that our new carbine is to be a *lighter, shorter and better* weapon in every way than the one we now have. The new carbine will undoubtedly be a better weapon for our use, for the reason that it is a magazine gun, if no other, but it could not well be made shorter without losing greatly in its accuracy; neither can it be made lighter than the present arm. In fact, it is to be a little longer, which will greatly increase its accuracy, and I believe a little heavier than the present carbine. But in my opinion neither of these changes will increase in the least, the difficulty of carrying it.

I have tried the French method of carrying the carbine, and found the discomfort and fatigue resulting therefrom so great that it is almost impossible for any man to endure it during the long marches to which we are liable. This method answers perfectly for the protection of the carbine, but it is ruinous to the trooper. Lieutenant SMITH objects seriously to what he calls the "cow-boy" method of carrying the carbine, which is the one I strongly advocate. I think that if he will try this method himself on a trip of a few hundred miles, and carefully change the adjustment of the straps until the carbine is gotten into the proper position, he will become a convert to this system, and be willing to acknowledge that the "cow-boy" method is practically about the most satisfactory that can be used. This method has recently been given a thorough trial in my troop, and I have yet to find any serious objection to it.

FORT BAYARD, N. M., Jan. 29, 1893.



— T O —

MR. L. CONSTANTINE,  
ON RECEIVING FROM HIM  
AN OLD SPANISH SPUR.

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BY H. T. BARTLETT, FIRST MASSACHUSETTS CAVALRY,  
AND HEADQUARTERS BUGLER TO GENERAL HENRY E. DAVIES.

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PROLOGUE.

That Asiatic gallinaceous bird  
Sometimes called chanticleer, the first bestirred,  
Methinks, the inventive mind of man who,  
Envious of the strutting cock-a-doodle-do,  
Did question Nature's course which, you all know,  
Intended we should have the biggest show;  
But, Nature's haste to mould the coming man,  
Forgot the spurs provided in the plan;  
Then, constant to the worth of her idea,  
She stuck them on the legs of chanticleer.

Poor, unfinished man; thus forth projected,  
Flanks exposed, and rear all unprotected,  
Beheld the favored cock—his model found—  
And so we wear the spur the world around.

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O, Espuela Mia, where didst thou have birth?  
Who brought thee, hornéd shape, from caves of earth—  
Who woke thy slumbering—thy dreams of peace—  
To roam this world where conflicts never cease;  
And gave thee arms to clasp the booted heel  
Of arméd men that, mounted, they might feel  
Like Gods the wingéd PEGASUS upon,  
Who ride to water at Mount Helicon?

Hast thou upon some tyrant's heel protruded,  
Or with some bandit chief stern law eluded?

Wast thou the badge of knighthood in thy day,  
Or didst thou jingle in a shameless way  
With old Parthenians, spurring to the rear  
From out the fight to get a glass of beer?

Didst roam with Persians wild through Holy Land,  
Or track with Bedouins o'er Sahara's sand?  
*Vielleicht* thou crossed with CÆSAR o'er the Rhine  
To drink rare nectar pressed from *sonnenschein*.  
Perhaps thou raised the Cross with CONSTANTINE,  
And spurred 'gainst Saracens in Palestine.  
Perchance some proud Hidalgo booted thee  
To follow great COLUMBUS o'er the sea;  
Then, chasing MAXIMILIAN helter-skelter,  
This Northern clime became thy final shelter.  
Thrice welcome art thou! Here beneath my roof,  
Where trophies of the field and camp give proof  
That thou hast found a genial home at last,  
Rest easy. All thy wandering days are past.

Since wars began, the arms of nations changed  
From slings and spears to guns the longest ranged;  
From armoured men to armoured ships, the stride  
Of centuries declare a "Great Divide"  
Now past. But thou, O Spur, hast changed not;  
The fertile thought that, laboring, thee begot,  
Lives with thee still as in the days of yore,  
Thou favored emblem in the poet's lore.

When MACBETH said, "I have no spur to prick  
The sides of my intent," (to make him stick  
To faint resolve) he needed only thee,  
O Espuela Mia, only thee;  
Wanting thy strong, stimulating rowels,  
He lost his head. MACDUFF had no "bowels  
Of compassion." Then stalked MACBETH again  
With BANQUO's ghost, and others of that train,  
Alas! for lack of guiding spur. Take heed,  
My friend, in this. Do no half-hearted deed.

Get you a spur. A good, old, honest spur;  
And drive its rowels deep when doubts deter  
Your choice of truth and right. Mount, if you will,  
Fame's plunging steed — ambition's creed — but still  
Wear spurs, to keep them well confined,  
And in the ranks of rectitude aligned.

Thou lookest lonely, Spur, thy rowels droop  
Like captured banners of a vanquished troop;  
Thy form once bright has now grown old and rusty;  
The bones of him who wore thee now are dusty;  
But, none the less, thy form invites the Muse  
From scenes of strife, where thou hast fought to lose,

To scenes of love, where thou hast followed free  
The silken skirts that danced in youthful glee;  
From Bacchanalian feasts and ribald songs,  
To fields where thou hast sought to right the wrongs  
That cursed the race; to elevate mankind,  
And spur the nations on as God divined.

Thou prick'st my brain afresh. Regarding thee,  
I find a striking similarity —  
Ah, yes! Of course! Thy brother was my friend;  
And stirring days together we did spend;  
He was a chap to cling to—heart of steel—  
And loyal from the head down to the heel.  
Thro' heated dust, thro' rain and mud we've tramped,  
We've slid the fields of ice, in snow we've camped,  
We've sat whole nights in saddle out on picket,  
And Mosby's men we've hunted through the thicket;  
We've swum the chilling streams on many a scout,  
And Treason's valiant hosts have put to rout.

As veterans both, we'll spend remaining days,  
Then ride Pale Death beyond the sunset rays;  
In Paradise we'll seek MAHOMET'S ease  
On wingéd steed, to fly where'er we please.  
Together, then, whate'er betide below,  
No ill can check the quick'ning spirit's flow  
Between us. Clear it is, high heaven meant  
That man in thee should find his supplement.

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For further thought, I beg you will refer  
To my dear friend—the good, OLD SPANISH SPUR.

NEW YORK, December 26, 1892.

CAVALRY UPON THE FIELD OF BATTLE; BY LIEUTENANT-COLONEL PREJENTSOFF, OF THE GENERAL STAFF OF THE RUSSIAN ARMY.

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TRANSLATED FROM THE RUSSIAN.

BY FIRST LIEUTENANT GEORGE W. READ, FIFTH CAVALRY, U. S. ARMY.

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CONCLUSION.

HISTORY proves that cavalry is in every respect an indispensable arm of the service; upon the theater of war it is the eyes and ears of the army, and upon the field of battle it is capable of the well-timed support or rescue of the other arms when they are weakened, of developing their success, of overcoming the obstinacy of the enemy; in time of reverse, it sacrifices itself to save the retreating troops of its army from complete destruction.

Under FREDERICK THE GREAT, the Prussian cavalry, being far higher in tactical training than the infantry, had priority upon the battle-fields; in the time of NAPOLEON I. the French cavalry, with less training than the other arms, acting in dense masses at the critical moments of the fight, under talented generals, coöperated brilliantly with both the infantry and artillery; at such critical moments, the other arms found well-timed support in the cavalry. After the battle the cavalry always developed the success of the other arms by a persistent pursuit of the enemy upon the field itself and upon the theater of war.

In the modern epoch, with a training equal to that of the infantry, cavalry has seldom taken an active part in battle. In the campaigns of 1866 and 1870-71, a disposition is observed on the part of the belligerents to use cavalry in conformity with its properties, but this was not carried out, and the cavalry either remained constantly inactive in battle or was sent to the attack in small bodies—simply to slaughter—without profit to the other arms of the service; or else undertook ill-timed attacks in masses with no influence upon the

course of the action. In the late campaigns an absence of initiative and an imperfect understanding of the function of their arm in battle are observed in the commanders of the cavalry, which therefore operated as a secondary arm of the service, supplementary to the infantry. The settled conviction in the cavalry that it is impossible for it to attack undisordered infantry and the frequently practiced admission upon drills and maneuvers in time of peace that every cavalry attack against infantry is unsuccessful and the cavalry annihilated, has had a very harmful influence upon all the battle training of this arm.

But we again repeat that it can never be known beforehand what virtues are possessed by a certain force of the enemy nor how high its moral condition may be, and therefore cavalry attacks against undisordered infantry should not be condemned nor the making of such attacks forbidden. On the contrary such attacks in battle should be encouraged, and they should be practiced as far as possible in the drills in time of peace.

An attack by cavalry against apparently undisordered infantry frequently saves its own infantry from attack and encourages the infantry which is attacking the enemy's position. Sending the cavalry to the attack—simply to slaughter, without obtaining any result—can only be avoided by the suitable training of the cavalry commanders. The modern individual training of cavalry is conducted in time of peace as carefully as that exacted by *FREDERICK THE GREAT*; but maneuvers of cavalry in masses are scarcely practiced at all, and joint drills of cavalry and infantry have begun to be carried on only very recently. The requirements of battle demand from the cavalry rapidity of movement and capacity to maneuver; valor, daring, and audacity must be incarnate in this arm. But all this can exist only upon the conditions of good men and horses, of their suitable training, of a proper armament and equipment, and of an organization adapted to the conditions of modern war. Cavalry with the full complement of horses, trained to make rapid closed attacks from great distances, knowing its place on the field of battle, and able to take a well-timed part in the fight, is the only kind that is effective in modern war.

In all European armies the cavalry has been regarded as a fit subject for controversy for more than half a century. Therefore, while the infantry and artillery have rapidly improved, the cavalry has fallen behind them more and more, gradually losing touch with them. In consequence, while the campaigns of 1866 and 1870-71

made the infantry and artillery almost one, the cavalry was frequently a sort of superfluous ballast.

Even very recently the cavalry has been looked upon rather as the brilliant troops of peace time, and in its training its use in battle has been entirely ignored. The cavalry has advanced far in the matter of caring for the horses, in attention to their exterior appearance, in manège training, and in making short, showy attacks on the smooth drill ground. It has been entirely lost sight of that modern battle-fields are broken ground, and that before coming into contact with the enemy it is necessary to discover him, for which sleek, fat horses are worthless. Horses for this service must be enduring, trained to long continued work, and inured long before to the laborious life of war time. So in the campaign of 1866 the cavalry of the adversaries showed itself entirely unprepared for its battle functions. As it had received no training in time of peace in combined forces of the three arms, nobody knew its place in action, where to post it on the battle-field, or how to organize and assign it in the composition of the tactical units of the three arms.

The best cavalry will be of no consequence unless it be in its place in battle in good season, and even then the greatest dash, boldness, and rapidity of movement will avail nothing unless the cavalry have fully prepared commanders.

It follows from the above that in our time no arm of the service needs such careful tactical training as the cavalry. The military education of this arm should be higher than in the infantry and artillery, and therefore it must be given the best complement of officers, as in the cavalry the head of the rider outweighs the horses. As we saw above, the great commanders always had broader aims in the instruction of cavalry in time of peace, and the training was conducted more carefully and was under more perfect control. It was borne in mind that in time of war the individual trooper should possess great independence, and the execution by him of a certain errand was frequently found to depend largely upon his personal discretion. The trooper must be kept to his duties the more strictly because the horse gives him a multitude of expedients to evade supervision. Still greater preparation is necessary for the cavalry officer. In time of war he must be able to perform a given duty, and must therefore have intelligence and independence, activity and presence of mind, united to a reasonable boldness and dash. If to all this there be added still, that health and physical strength are necessary to an officer, then it must be admitted that there are not a great many cavalry officers to be found in any government who

are really fitted for the very complex modern service of this arm. It was another reason for the decline of the cavalry in the present century, when this arm began to be regarded condescendingly as a battle arm of the service, and to be looked upon rather as a parade force for reviews in time of peace; and hence, it is clear, gradually arose the views of the inability of cavalry to attack infantry and artillery, and generally to take an active part in battle.

In our time more than ever the closest connection is necessary between cavalry, infantry and artillery. The cavalry frequently stands in need of infantry, and horse-artillery will almost always accompany it; cavalry commanders should therefore be acquainted with the properties of troops of the three arms of the service, which is really very seldom the case.

In French military literature the opinion is even expressed that if there is a reason for the limited action of the cavalry in battle at the present time, it is only the want of able chiefs to command it.

The French instructions of 1876 touch upon this question, among other things, and say: "It is necessary for cavalry commanders to see through the situation of the battle in the shortest interval of time and in the most complex case, and, while weighing the advantages and consequences of a decision, to execute the same without the slightest hesitation; they must be able to make an analysis under very complex conditions; must know how to discern the present object of the enemy; must conform to the operations of the artillery, under no circumstances impeding the latter; must be able to cover themselves from the enemy's fire without hindering freedom of movement in all directions, in order to envelop the enemy's flank at the opportune moment and to guard against a flank attack."

General DE BRACK, in his writings, lays down the following requirements for a commander of light cavalry: "(1) An exact, cool-headed and mathematical estimate of his own strength and the enemy's; (2) rapidity and accuracy in judging the moral condition of troops; (3) the ability to quickly estimate all the details of a position; to accurately determine the distance from local objects to the enemy, and the nature of the various obstacles of the locality with respect to the possibilities of attack, defense or retreat; (4) rapidity of decision and action; (5) firmness of character, the impossibility of despairing, and the ability to keep his head at the most critical moments; (6) cool-headed presence of mind, involuntarily reflected upon subordinates and constraining them to look upon all with the eyes of the commander. By adding to all the above, exemplary bravery and justice to subordinates, it is possible

to fully sketch the personality of the true cavalry commander, who, upon all occasions, is competent to command hundreds of squadrons and frequently to wrest the victory from the hands of the enemy."

To command cavalry in battle, especially in modern war, is no easy matter; in a very complex situation, on the wing—so to speak, it is necessary to profit by the mistakes of the enemy, while a single false step is irreparable. An infantry general can verbally repair an error or sometimes even change the direction of an attack; but once hurled to the charge, cavalry cannot be stopped; it continues to the end—to recall it is impossible. For a real cavalry commander, knowledge, suitable preparation, and experience are not always sufficient; he must possess a certain degree of inspiration and talent. Therefore there have not been many cavalry commanders of the kind treated of in modern military literature; in the past (as in the present) a majority of them, possessing neither the education nor the suitable training, and looking with perfect indifference upon the cavalry as a battle arm, finding the responsibility for independent operations too heavy, preferred in battle to await orders from higher authority, which were either not received at all or were received too late.

The difficulties of the ground and the strength of the infantry fire may sometimes prevent cavalry from operating in accordance with its functions in masses. But cavalry should frequently cooperate in battle with the other arms, in strong or weak bodies; it is necessary for cavalry on some occasions to support the other arms. Indeed, since the time when the greater mobility of the infantry permitted it to fight on any kind of ground and it was no longer considered necessary to choose plains for battle-fields, it has frequently been necessary for cavalry to operate in closer connection with the infantry and artillery; in order to develop the success gained by a cavalry attack, it is the duty of the infantry and artillery to support the cavalry.

As the kind of service that may be demanded of the cavalry cannot be foreseen, it would seem that a portion of the cavalry should be detached for service with the infantry, and another portion kept in mass for pure cavalry action. As it is always easier to detach suitable bodies of cavalry from a common mass, when they are needed, than to collect them,—as a principle of modern war, such details should be limited at the beginning of a battle to the smallest possible number of cavalry for service with the infantry. The more the cavalry is scattered on the battle-field, the more limited will be its usefulness; for this reason it is desirable in battle to always have a



strong cavalry force under command of a chief of cavalry. This force should not be attached to any battle unit, as that would hinder all its actions; on the contrary, depending only on its chief, it should possess the greatest independence. Thanks to its ability to move rapidly, cavalry can always speedily reach the points where its attack will have effectual results. The proper and most effective support of cavalry is horse-artillery, calculated by its fire to shatter an enemy when he is taking advantage of ground over which an attack cannot be made.

At the beginning of a fight, the place of the cavalry in the battle order is in the general reserve; but as the battle progresses, the cavalry mass should approach the battle lines in the direction of that portion of the field which, from the nature of the ground, may offer chances for the action of cavalry.

In conclusion we permit ourselves to say, that the extremely narrow use of cavalry in battle in modern campaigns has been chiefly due to the failure to train it in time of peace in accordance with its battle functions, and to its exclusiveness with respect to the other arms of the service.

The efficiency of modern small-arms should only be an incentive to the improvement of the cavalry to such a degree that in composition and training it may be no lower than the Prussian cavalry of *FREDERICK THE GREAT*, and may occupy in the modern epoch the first place among the troops of the three arms of the service.

## MOUNTAIN SCOUTING.

BY SECOND LIEUTENANT GEORGE E. STOCKLE. TENTH CAVALRY, U. S. ARMY.

OF late years very much has been written, and ably written, concerning the proper handling of troops in scouts by small parties through wild country, such as fall to the lot of the cavalry and infantry serving on our frontier—work such as no other civilized troops except the British in northern India, have to perform. Yet it seems to me that the subject is not exhausted, inasmuch as most of these writers have not laid much stress on the minutiae—the small details of campaigning which are sometimes essential, and always conducive, to the comfort and well-being of the men. I propose, out of my limited experience, to select a few details which may be of service to young and inexperienced officers.

The cavalry or infantry "second" generally gets the first taste of field work in the shape of an order "to proceed with ten men to-morrow morning in pursuit of a deserter," or as Paymaster's escort; or, maybe, with a larger party, he rides into the mountains with the vain hope of catching some notorious Indian renegade. What he does will depend on his individual character and the advice he may receive, and I will now proceed to give him such advice as may be thought necessary.

In the first place, have the senior non commissioned officer of your detachment report to you and receive the ration return for the party. Your packer, or teamster, will generally bring his rations from the teamster's mess, but you may be required to draw for him as well. When you use pack-mules, have your salt and sugar put up in cloth bags and your sacks of flour in grain sacks. Take part of the flour ration in hard bread. The regulations give the proportions of cooking utensils to the number of men. If you are short of transportation, the heavy Dutch ovens, though very convenient, can be dispensed with. Good bread can be made in mess-pans, using

two of different sizes—one to cover the other. If you have time, have your coffee roasted and ground before leaving the post. Two mess-boxes—a load for one mule—will be sufficient to hold ovens, pans, skillets—the kitchen, in fact, for thirty men. If you have wagon transportation, your kitchen should be packed in the back of the wagon, and in such a way that it may be the first thing unloaded. Some articles very convenient about a cook-fire are coffee-pots, large pans for mixing bread, skillets and, when you can carry it, a crane, consisting of a pair of iron uprights driven into the ground to support an iron cross-bar, with small hooks to hang the kettles on. The cooks should be detailed some time before starting.

So much for subsistence. Next look up the horses of your detachment and inspect each one yourself, to be sure there are no sore backs or any unshod horses with the command. I believe that horses can do the light work we have about garrisons—except, perhaps, where it is very stony—without being shod, and perhaps with advantage to them, but long marches, over varied ground, carrying a trooper and his pack, will wear down the hoof faster than Nature can replace it, and the consequence will naturally be tender-footed horses and a man dismounted. If your work is to be over frozen and icy ground, the horses should be rough-shod. A barefooted horse will travel better over slippery ground than one shod without calks, especially if the shoes have been on some time and have worn smooth. Especially should you look to the shoeing of the mules, and my belief is that, whether pack or draught, they should always be rough-shod. I have noticed that such was the practice of the best packers among those in Arizona whenever it was possible, though there they had but little trouble to fear from slippery ground.

Inspect your detachment before starting and see that each man has the articles of equipment required by regulations, and that the saddle is packed as therein prescribed. An exception to this, in my opinion, is that each man should have his side-lines carefully rolled up and packed in his locker. It keeps them from rust, and they are of as much use there as I have ever found them to be in service. A horse can stampede with them easier than if hobbled; they are sure to chafe the fetlock, and often a horse is thrown on account of the side-lines getting entangled in low brush. You may, with advantage, dispense with the carbine-sling as well. If the carbine must be attached to the person, the sling becomes a necessary part of the equipment, but so far as I can see, there is no serious objection to the soldier's putting the carbine in the boot at the preparatory command for mounting and withdrawing it after dismounting, and the man is

relieved of the inconvenience of a broad shoulder belt, not to speak of the advantage of being able to get off his horse in a hurry if the animal falls.

At this first inspection you should see to the arms and ammunition. You ought to inspect these at short intervals as long as you are out, for though old soldiers can generally be trusted to take care that their arms are always serviceable, yet young ones sometimes neglect it. I recall an incident that occurred in Arizona. Lieutenant CLARKE, Tenth Cavalry, in command of a detachment, had attacked an Indian camp. Some of his men, sent to flank a hill, did not get into the fight. Going into camp that night I saw a deer, and directed one of these men to shoot it, and then discovered that the firing-pin in his carbine had been broken off and would not explode the cartridge. I had been in charge of that part of the detachment for several days, and the blame rested with me. The pistols should invariably have but five chambers loaded and the hammer on the empty one. In the last four or five years one officer of my regiment has had a narrow escape, one private been badly wounded, and one killed, through neglect of this precaution against accident.

I have never seen the saber taken on scouts. It is certainly of no use in Indian work, whatever its value may be elsewhere.

The advantage gained by having each soldier supplied with a front and hind horse-shoe and nails for them, more than counterbalances the objection to the extra weight. Shoes generally come off on the march and, with the perversity of inanimate things, generally on the stoniest part of the road, and when the transportation is several miles in rear. One man, whose place is in rear of the column, ought to have a light shoeing hammer, and with this the shoe can be tacked on at once, no time be lost, and a horse be prevented from going lame.

So much has been written about cavalry marches, the gaits, length of halts, etc., that nothing new can be found to say on the subject. I believe in the trot as a cavalry gait, but it should alternate with the walk. Do not neglect short halts at intervals of half an hour to an hour, depending on circumstances. It rests both men and horses, and gives the latter a chance to pick up a light lunch of grass. In this connection, a quotation from FRITZWYGRAM may not be out of place. He says: "The capacity of the horse's stomach is small in comparison to his frame. He therefore requires to be fed frequently. In a state of nature the horse is almost constantly browsing and yet is rarely so full as to be unable to exert his power of flight." It certainly keeps up a horse's strength wonderfully to allow him to graze a

few minutes at intervals during the march. Besides this, if the halts are somewhat frequent, the men can take advantage of them to tighten girths, and you will have fewer stragglers from the columns.

As to the length of daily marches, you must be governed by circumstances. A march of thirty miles is a very fair average, but at a pinch, with good horses carefully ridden and well fed, you can make seventy-five miles a day for three or four consecutive days. The history of our operations against Indians on the frontier affords many examples of even more severe marching than these, made in emergencies.

The weather is an important element to consider in making long and fatiguing marches, as heat enervates horses just as it does men, while a cool atmosphere will sustain the strength. A night march, if not prolonged beyond 3 A. M., will not fatigue the horses nearly as much as the same amount of travel in the day time; but they must have rest from that time until day-break. Make haste slowly on a very long march and give your stock frequent short rests, to feed and recover their strength. The expenditure of energy in the trot is perhaps one-half more than in the walk, while it covers fully twice the distance. A gallop breaks down a horse and should be adopted only under the most exceptional circumstances. You should, when marching at the trot, give the men opportunity to adjust their saddles during the short halt you make and prohibit their stopping at other times. They will invariably waste time and then gallop to catch up with the column. When the horses are low in flesh the bed blanket should be used over the saddle blanket. A piece of linen or canvas, the size of the blanket and worn next the horse's back under the blanket, will often prevent sore back. The corona, that part of the *aparejo* furniture in contact with the mule's back, is lined with canvas. However careful you may be you are apt to have some sore-backed horses. On making camp these sores should be carefully washed with a light antiseptic wash—a solution of carbolic acid is good—and then greased with vaseline. Bacon grease is better than nothing, but I think the salt in it is irritating to the raw surface. Before saddling, grease the sore again and, if possible, set the saddle so as not to press on the sore. Fistulous withers can often be cured even on the march by using a crupper. The weight may be taken off sore loins by folding under the corners of the blanket, or what is a better plan, by cutting through two or three thicknesses of the blanket, holes large enough to fit over the sore. This spoils the blanket, but is sometimes necessary when the horse must be used. A careful observance of the general rules for the treatment of horses

on page 89 of "Cavalry Drill Regulations" will prevent colic, kidney disease, founder and other ills that horse-flesh is not heir to, but which are often inflicted on him by his ignorant rider.

The considerations to guide you in selecting a camp are security, water, wood and grass. You will not always find it possible to combine all these essentials to a good camp, but you can generally find a sheltered portion within a quarter or half a mile of water and close to grass. If an attack is among the possibilities, that camp is badly selected which is commanded by a hill within 500 yards, flanked at close range by a wood or thicket, or placed on a convex bend of a stream. It is useless to reiterate the principles governing outpost duties, but the neglect of them has caused the failure of a good many scouts. I shall here recall an incident. GERONIMO once passed with some twenty or more warriors within two miles of a camp where two troops of cavalry were sleeping, and in plain view from all the hillocks close to the camp, but not in view of the sentinels in the camp, and the first they knew of it was when the pursuing scouts came up.

The Apaches understand the necessity of a close lookout, and it is their invariable rule on making camp to detach some of their number to occupy sometimes the peaks near camp, sometimes two miles away. These men build a small barricade of stones and remain in observation till the camp is broken up.

If you have to use stagnant water, boil it. Sometimes you will be obliged to camp near mines, reduction works or mills. The water is apt to be unwholesome, sure to be so around copper works and, if you are to stay in their vicinity any length of time it will pay you to haul water or dig a well. Alum clears muddy water. Finding water in the desert is an art in which few but Indians can hope to excel. In the southern country you will generally find water at ten to fifteen feet where grease-wood is plentiful and green, and sacaton grass is a pretty sure indication of water at five to ten feet. Turtle doves are never found far from water. An officer of my regiment told me once that his command had been saved in Mexico by following the flight of the doves in the evening. Water can often be brought to the surface of the sandy bed of a dry mountain stream by marching the column rapidly up and down a stretch of one or two hundred yards for several minutes. A trench dug across a dry bed will fill better than one parallel to the stream. If there is a likelihood of your being obliged to make a dry camp, have the men fill their canteens at starting and have them refilled during the afternoon, if you can possibly pass by any water. I believe in watering horses often, and especially a short time before making camp, so that

they may begin grazing at once. A thirsty horse will not eat, and though there may be water at the camp, it may not be convenient to water the horses at once.

The "buffalo chip" of historic fame has disappeared, but has left a successor in stock countries that answers the purpose of fuel just as well. There is seldom any trouble about fuel, however.

In the matter of forage you will either depend on what you can purchase or on the wild grass the country affords. In the latter case, you must take what Providence sends you, but in any case keep the grass near camp for night grazing. In the former case, buy oats, if possible. Sometimes, in buying from Indians, you will have to measure the grain. A quart cup of oats weighs  $1\frac{5}{8}$  pounds; of barley,  $1\frac{1}{8}$  pounds; of corn,  $2\frac{1}{8}$  pounds. The cubic contents of a hay-stack multiplied by  $\frac{1}{3}$  for old hay and  $\frac{2}{3}$  for new, give approximate weight in pounds.

As to the herd, you must be guided by circumstances. Loose herding is best for the horses, but requires a herd guard of at least two men to a relief, and there is always danger of a stampede. Hobbles are good, and can be improvised with rope or rawhide. An Austrian hobble has been described to me as follows: A one-quarter inch rope is covered with soft leather and the ends spliced to make a bight about twenty-four inches long. The bight is wrapped together from the center to within a couple of inches of each end, leaving two loops at the ends. Two short cross-sticks are firmly wrapped in about eight inches from each end, leaving two loops at the ends. In use, the loops are carried about the fetlocks and over the cross-sticks, making the hobble. As to the lariat, I will quote from an article by Captain BECK, Tenth Cavalry, in the CAVALRY JOURNAL for March, 1890. He says: "The horses and mules should be herded at night if practicable; they should always be placed on grass quickly after camping. \* \* \* \* If a march has been accomplished by noon or early in the afternoon, and the herd has been grazed until sunset, it is well to place the animals on lariat at night, if good grass can be found in the immediate vicinity of the camp. This grass should not be encroached upon during the day, but be held in reserve for use during the night. In the immediate vicinity of an active enemy, when it is almost a certainty that he will get a part, if not all of the animals, if they are loose at any distance from the camp, the lariat should be used as a means of safety, and there are various ways in which to use it. The following plan secures the horses but prevents much rest for the men. Four pins are driven into the ground close together, the men to whom the



horses belong lying between the ropes, using their saddles, which rest on the picket-pins, as pillows. There was a plan adopted by several officers, in the campaign of 1874 against the Comanches, which prevented any loss of horses by stampeding, but it was not conducive to their good condition. The lariat was carried down from the halter-ring through the near front hobble of the side-line, thence along the ground to the picket-pin."

A good way to secure the lariat or picket-line where the soil is sandy and the pins will not hold, is to bury the pin two or three feet, lying horizontally, with the rope fastened to the center of the pin. Stamp the earth in the hole, and no horse can pull it up. This is mentioned in Lieutenant FARROW's "Mountain Scouting," a book that contains many valuable hints.

You will save time by taking with you a supply of Q. M. Forms No. 10, voucher to Abstract "A" for wood and forage, and Form 13, voucher to Abstract "B" for water. An emergency certificate in some such form as the following, is required: "Emergency purchase in open market for troops operating in the field. No time for notice or proposals."

It may sometimes become necessary for you to leave behind part of your load, and perhaps have to hide it in the hills. I read lately in LEWIS and CLARKE's journal a description of the caches they made near the headwaters of the Missouri where they left part of their belongings for about six months with perfect safety. They were as follows: "In the high plain on the north side of the Missouri we chose a dry situation and then describing a small circle of about twenty inches in diameter, removed the sod as gently and carefully as possible; the hole was then sunk perpendicularly for a foot deep. It was now worked gradually wider as it descended, till at length it became six or seven feet deep, shaped nearly like a kettle, or the lower part of a large still with the bottom somewhat sunk at the center. As the earth was dug it was handed up in a vessel and carefully laid on a skin or cloth, in which it was carried away and thrown into the river, so as to leave no trace of it. A floor of three or four inches in thickness was then made of dry sticks, on which was placed a hide perfectly dry. The goods, being well aired and dried, were laid on this floor and prevented from touching the wall by other dried sticks, as the merchandise was stowed away. When the hole was nearly full a skin was laid over the goods and on this earth was thrown and beaten down until, with the addition of the sod first removed, the whole was on a level with the ground, and there remained not the slightest-appearance of an excavation."

For mountain work I think shoes and canvas leggins are much better than the heavy cavalry boots. The infantry outfit is excellent. A good way to dry your shoes when they are water-soaked is to fill them with grain. It absorbs the water, and swelling, counteracts the tendency of the leather to shrink.

You should have a pair of field-glasses, a compass, watch, notebook, and maps with you. Very often you will be your own surgeon, and the post surgeon is a good man to ask for recommendations as to what you ought to take. He can also show you the publications of the Surgeon General's Office, describing different kinds of mule litters, chair seats, etc. I think the chair seat is particularly valuable. It is made by taking two stout sticks about three feet long, lashing a cross-stick at one end to separate them about fifteen inches, and the frame covered with canvas. The loose ends of the sticks are inserted in the cantle rings of the saddle and fastened with twine. Two rope or strap braces connect the upper end of the chair-back with the pommel rings, and the patient is thus supported in the saddle.

In conclusion, I will say that the foregoing is not intended for those older officers, who are all very competent teachers, but for the youngster who often finds himself confronted by a condition for which he has not the ghost of a theory.

## CONVERSATIONS ON CAVALRY; BY PRINCE KRAFT ZU HOHENLOHE-INGELFINGEN.

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TRANSLATED FROM THE GERMAN,  
BY FIRST LIEUTENANT CARL REICHMANN, NINTH INFANTRY, U. S. ARMY.

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### FIFTH CONVERSATION, (JANUARY 10, 1886).—OF THE DECLINE OF THE PRUSSIAN CAVALRY.

H. It is a pity to see a cavalry of such excellence as that of the Great King, go thus to ruin.

S. It certainly is. But it is instructive to inquire into the causes of the decline in order to learn how to meet a similar decline in the future, if within the power of man.

H. Already during the campaign of 1806 the Prussian cavalry no longer was what it had been under **FREDERICK THE GREAT**. Whatever may be said as to faulty organization and leading in general, many regiments no longer came up to the very lowest standard required of a cavalry regiment.

S. Yet many accomplished as great things in 1806 as they had done in the campaigns of the last decade of the past century.

H. At the beginning of his work on the Prussian cavalry from 1806 to 1876, **KÖHLER** gives a condensed statement of the causes of the decline up to the year 1806. He says that already in the latter part of his life much that was injurious to the development of the arm, escaped the notice of **FREDERICK THE GREAT**, because his duties as monarch claimed his attention in so many directions. He refers to much that was useless, artificial and trifling in the drill forms and evolutions. After the demise of the Great King he ascribes the decline principally to the absence of one common head, an inspector general, to represent and promote the interests of the cavalry. In its organization and consequent dispersion, two regiments being attached to each brigade (division), he sees the cause of its lack of active participation in the battles of 1806.

S. I cannot entirely agree with my friend K  HLER, whose early death is much to be deplored, in the necessity of an inspector-general of cavalry to prevent its decline or deterioration, unless as, in the times of the Great King, the supreme war lord himself sets forth the requirements cavalry must come up to, an inspector-general will not be of much use either. Unless the monarch adopts the views of the inspector-general, the interests of this branch of the service are not properly taken care of; if he adopts them, an inspector-general becomes unnecessary.

H. All due respect to the authority of a monarch. But you cannot demand that a monarch shall always be the best horseman in his country.

S. That is not at all necessary. FREDERICK THE GREAT was not the best rider in his country any more than NAPOLEON I. On the contrary, there are sufficient particulars related of both to prove that riding was anything but their strong point. Nevertheless, as supreme commanders, they knew how much they must and could require of the cavalry. They followed up their demands with unyielding rigor, and that is the reason why the cavalry complied with them. The supreme commander establishes what is to be demanded of the branches of the service; the latter will govern themselves accordingly and come up to the requirements.

H. What we saw in our own artillery confirms your statement. The most important and far-reaching improvement, the introduction of rifled guns, was insisted on by our monarch, the protest of the inspector-general of artillery notwithstanding.

S. K  HLER omitted to mention one essential cause of the decline. It was excessive economy that made the cavalry retrograde. If so many furloughed men and "freiw  chters" were left at home during the daily exercises, that there remained but seven good riders per company or fourteen per troop, as stated by MARWITZ, then the great mass of cavalry could not have been equal to the most essential requirements. In the course of a long peace the squadrons finally reach a stage where they consider the riding-hall tricks of these seven or fourteen riders as the crown and ultimate object of their labors. They will, perhaps, even detest the drill and maneuver season as one which spoils these tricks. K  HLER has mentioned these tricks, but has not mentioned the causes which brought them about. Untimely economy and niggardliness in the most essential requirements of an army in peace must undo all arms.

H. Would that all representatives of the people would bear this in mind when considering army appropriation bills!

S. Certainly, it is to be desired. And that they would realize that such untimely economy causes, in the end, greater sacrifices in money, and is rank extravagance! For an unsuccessful war costs ten times the money saved, not to mention the accompanying shame and misery.

H. When considering this and reading MARWITZ's report, one is astonished that at the end of the past century and in 1806, there still were regiments which made good their claims to the old established glory of the Prussian cavalry.

S. That may be due to the fact that there were still some regimental commanders who had received their first instruction in SEIDLITZ's time, perhaps also a few who had served in the Seven Years' War. These men placed efficiency in the field above nice tricks learned in time of peace. Nor did they permit the abuses which went to fill the pockets of the troop commanders.

H. What abuses do you refer to? We have no reason to doubt the honesty of the then troop commanders.

S. FREDERICK THE GREAT in that sharp criticism related by SALDERN, and to which you called my attention yourself recently, said: "The troop commanders think only of filling their pockets."

H. This is true. But this profit was sanctioned by law and regulations for the purpose of defraying expenses which their salary was insufficient to meet, but which custom of the service had saddled upon their private purses. Thus the pay of the men whom they furloughed in excess of the number authorized by the War Department, went into their pockets.

S. It injures the efficiency of the troop for field service. When a regimental commander limited the number of furloughed men, more men remained in continuous service, and if he at the same time insisted upon having warlike training and riding continued, instead of devoting the major part of the work to riding tricks, then he kept the cavalry in a state of efficiency at least similar to that under SEIDLITZ.

H. Your opinion is confirmed by the fact that one regimental commander who had been out of service during the long years of the decline of the cavalry, imparted to his regiment a high degree of training and effective service in the wars from 1792 to 1795. I refer to BLÜCHER.

S. This was the case with several other regiments in 1806. Besides many distressing episodes testifying to the inefficiency of individual squadrons, detailed narratives of 1806 and 1807 relate many a glorious deed. "They fought like heroes," says many a report.

H. But generally speaking, in 1806 the cavalry did not begin to accomplish what might have been expected from it, having in view the Great King and SEIDLITZ. BLÜCHER himself expected more from it. In the battle of Auerstaedt he complained to the King, that in his attempt to rally the retreating cavalry, the latter instead of obeying orders, rode him down. The King replied: "They do not treat me any better, either."

S. The unfortunate organization which dispersed the cavalry instead of keeping it together in large bodies, the advanced age of many commanders incapacitated for vigorous initiative by mental and bodily infirmities, may have contributed much toward the disaster. But the fact that the cavalry was capable of bolting to the rear so as to ride down the King and BLÜCHER, proves that the major part had no command over their horses. I remind you of what I said of a cavalry capable of bolting at all, that the direction in which it bolted, was entirely a matter of accident. This fact is the best proof of the decline of the cavalry and particularly in riding efficiency of man and horse. This precludes the charge against the individuals of lack of proper spirit and courage, and hence I cannot contradict CLAUSEWITZ's opinion that in 1806 the Prussian cavalry still preserved the spirit of the SEIDLITZES and ZIETHENS. For what is the unlucky horseman to do when his horse bolts blindly?

H. The few who had control over their horses, it seems, held out before the enemy, but were overwhelmed by superior numbers. At least one would suppose this to be the case if it was everywhere as it was where LEDEBURG fought at Auerstaedt.

S. And thus the cavalry lost its best men and horses first. What remained?

H. According to HOEFFNER, and the work of the general staff on the reorganization of the army after the peace of Tilsit, and also according to KOEHLER, of 255 field squadrons with 39,700 horses, there remained seventy-six squadrons with 8,120 horses, which seventy-six squadrons were poorly mounted, poorly equipped, part of the men only partially trained.

S. It makes one shudder to think that after a war of nine months duration there should have remained but one-fifth of this imposing mass of cavalry.

H. Properly speaking the number was still smaller. For the number of seventy-six squadrons is given as that of the cavalry after the reorganization from 1807 to 1809. One would think that after the distressing experiences of 1806 and 1807 the remaining squadrons would certainly strain every nerve to restore their efficiency for

field service. They must have ridden and been trained in a warlike manner from 1807 to 1812. Much can be accomplished in five years.

S. The work must certainly have been constant, for during the years of adversity the whole army worked assiduously in the certain expectation of being called out once more to fight for the existence of Prussia and Germany. I know of individual regiments, as the Blücher Hussars and the Ziethen Hussars, that they rode and were trained during this time with industry and in accordance with the traditions handed down from SEIDLITZ's time. But were all regiments able to do this? Did they still have officers, non-commissioned officers and men of the old school? What was their formation?

H. LEDEBURG says that in 1807 he formed a squadron of Koehlers, Baireuth, Usedom and Württemberg Hussars, Irving Dragoons, Balliodz Cuirassiers, etc.

S. And they were certainly not the best riders; most of them were perhaps furloughed men and "freiweächters," since we have assumed that most of the best riders fell. How about the horses?

H. They were of course worse than the men. "Poorly mounted," KOEHLER calls the cavalry of 1809, without, however, citing facts in support of his statement. But he must have come in possession of such facts from the official records accessible to him. The best idea of the distressing condition of the then cavalry we gain in the work on the reorganization to which I referred above. In the beginning of January, 1811, in anticipation of a sudden attack by the French, it was intended to increase the cavalry. The squadrons were to be augmented to 125 horses and there were to be six more men than horses in each squadron "to replace the sick." The regiments retained for the present, the condemned horses "for police duties," etc., "for training recruits." But this augmentation of the cavalry never took place. For the number of horses fell so low that it seemed necessary to form three squadrons to the regiment in order to keep up the efficiency of the former.

S. How is the instruction of an organization in riding to be advanced if the recruits learn riding on condemned horses? Thus the incipient horseman does not learn how to ride, but merely how to cling to an animal broken down and weary of life. A fresh, gay cavalry spirit can be created and developed only on horses of fresh and lively paces.

H. The work further states that all the men without mounts were sent to the depots to break remounts.

S. An unfortunate measure! Do you believe that the squad-



rons, required as they were to be constantly ready and efficient for the field, dismounted their best men and sent them to the depots? However strict the orders may be, the troop commander will manage to keep the best men, if he must daily expect to take the field with what he has. How the remounts are trained at the depots we know from the last war. Remounts can be well trained only if the trainer takes a personal interest in each animal. Where is that interest to come from, if the horse must be transferred as soon as it has received the most necessary training?

H. We did the same thing during the last war.

S. In war the training of remounts in depots is a necessary evil; for troops facing the enemy cannot do the training.

H. The same reasons existed then. A sudden attack by the French was to be expected daily, and the state of things was more or less that of war.

S. That may be so. But it did not help the training of the horses any. Were the recruits also instructed at the depots?

H. It would seem so; for the work says of the depots in which the remounts were broken, that they corresponded to the drill depots of the regiments. Under the latter name, I suppose, are to be understood the depots for recruits.

S. Under these circumstances the cavalry cannot well have made much progress in three or four years.

H. Add to this the poor condition of the horses. I never saw any specific mention of it, but it is complained of in general. There were no breeding establishments in the country. The foundation for our present splendid condition of horse-flesh was laid only after the wars of liberation by **FREDERICK WILLIAM III.** Hence only such horses could be found in the country as were fit for the farmer's, not the cavalryman's use. The remounts had to be purchased abroad, but owing to the enormous cost of the war and the contributions exacted, there was no money.

S. Then there was nothing left of course but to retain condemned horses with the troop. But if economy is necessary in the most essential things, troops cannot improve, as I have already stated.

H. I am not surprised that it was not only not possible in 1811 to increase the number of horses, but that it was under serious consideration to decrease the squadrons in each regiment to three.

S. Were there not other causes also which tended to diminish the number of horses?

H. It is not impossible! I read in **LEDEBURG's** book (page 391)

that one of his own horses was taken with farcy and he tells quite naively that he had to sell it at a sacrifice. What would you think of an officer to-day who would sell, instead of kill, a horse infected with farcy?

S. There do not seem to have been any laws for the prevention of infectious diseases of stock.

H. This is merely a single case. But if an honorable man like LEDEBURG tells such things, it proves that he had no idea of the mischief he might have caused, and if it was possible for such an efficient troop commander to be ignorant on this point, ideas quite different from those now in vogue must have prevailed in regard to the most dangerous epidemics among horses.

S. During and after a war these infectious diseases of horses prevail in a much more violent form than in peace. It is due to the impossibility of exercising proper control over everything.

H. Certainly. We saw that in 1866 and 1870. But the principles followed by those charged with the supervision, should, at least, have been the correct ones.

S. LEDEBURG's story is a conundrum to me. For old cavalrymen from the wars of liberation told me indignantly how widespread these diseases were among the French cavalry, how little attention the French paid to them, and how carefully they had to be guarded against in our cavalry.

H. The reduction to three squadrons from four in 1811 was not carried out in most of the regiments, "because the remounts became fit for use sooner than could have been expected."

S. I do not quite understand that. A horse here and there may become fit for use in a surprisingly short time, but all the remounts? There is a suspicion that the training was precipitate to the detriment of the horses. However that may be, most regiments can hardly be presumed to have improved much in value in the years from 1807 to 1812, as concerns riding.

H. I think so too. The years 1807 and 1808 were spent in creating order, and most of the troops did not reach their proper garrisons before the end of 1808 or beginning of 1809 (the garrisons of Berlin and Potsdam not before the end of December, 1809). It was only in 1809 that the first instructions relative to training were issued, and in 1812 the major part of the cavalry again took the field.

S. If only the three years of 1809, 1810 and 1811 had been properly utilized, much might have been accomplished in that time.

H. It was some time before the higher authorities did get things

into working order. In 1810 those charged with preparing a set of regulations could not agree because of the wide divergence of the views of Colonels Count LAROCHE-AYMON and VON BORSTELL, and it was 1811 before a commission was appointed to prepare a set of regulations for the cavalry. In 1810 BORSTELL prepared "instructions," which, it seems, were observed for the time being. In these instructions the point most emphasized is the preservation of the horses. The condition of the horses and the difficulty of replacing them, rendered it necessary. The work of the general staff says: "It is remarkable, however, that this sacrifice, exacted by circumstances, was later on viewed as an improvement, and that there was no return to the old principles."

S. The seed thus sown was to bear bad fruit for many years to come. As late as the fourth and fifth decades of this century the horses of many regiments were brought out of the stable three or four times per week only, and the size of the horse's belly became the measure of criticism of the troop's condition.

H. I myself recollect hearing such views expressed here and there during my early services.

S. From all this, it would seem that the improvement of the cavalry up to 1812 was not great, and depended entirely upon the individuality of regimental commanders; for some regiments formed praiseworthy exceptions.

H. After this, on the whole superficial reorganization, the cavalry took part in four campaigns. And what campaigns!

S. First the one of 1812, in which almost the whole army engaged in it, was lost.

H. In the great catastrophe two Prussian cavalry regiments only were lost, which NAPOLEON had attached to the main army. In the North old YORK took care to preserve the troops under his command.

S. Then followed immediately the campaigns of 1813 and 1814 without a break. It is not surprising that the last remnant of the old cavalrymen was destroyed, so that the cavalry could not accomplish much.

H. And yet history records splendid cavalry actions. Remember the deeds of KATZELER as the commander of the advanced guard of YORK's corps, the cavalry actions of HAYNAU, MÜCKERN, LIEBERT-WOLKWITZ and LAON, not to mention other no less distinguished actions.

S. Do you count the destruction of PACTHOD's and AMEY's divi-

sions at La Fère Champenoise by cavalry alone on March 25, 1814, among the less important cavalry actions?

H. I did not count it as one of our cavalry, because there the Russian cavalry did the greater part of the work. This achievement of the cavalry at La Fère, however, loses much of its splendor if it is considered, that many charges of the cavalry were repulsed by the two divisions and that it was artillery that finally broke them.

S. According to the reports of PRINCE EUGENE of Würtemberg and his adjutant HELLDORF, some of the charges succeeded before the appearance of the artillery, and after it the cavalry had to make many charges and overcome the French infantrymen singly. The dead and wounded were lying in heaps with saber cuts on their heads. On the whole our cavalry during the wars of liberation did not come up to those expectations which, after the deeds of a SEIDLITZ, one is tempted to entertain.

H. Even in the most successful actions much remained to be desired in many particulars. Thus it is related that the commander of the Body Cuirassier regiment at Haynau, before the command march, commanded: "First squadron half left, fourth squadron half right."

S. He meant to create such a dense throng that no rider could turn around, in order that when the general runaway which he foresaw should begin, it would take place in the direction of the enemy.

H. An officer of this regiment who was in the charge also told me that afterwards everybody lost his head and no one knew what to do, because DOLFFS had fallen. Other veterans have told me that in the winter campaign of 1813 the horses of many cavalry regiments were so run down that it was next to impossible to make them move faster than a walk on soft ground, and that charges were frequently limited to moving forward at a slow pace and crying "Hurrah!"

S. That was not the case with all the regiments, otherwise the success of La Fère on the 25th of March would have been impossible. Furthermore the charge of the two Hussar regiments wearing the "skull and cross-bones" at Berry au Bac on March 14, 1814, proves that toward the end of the campaign there was still some cavalry that was in good wind. It was called "the long charge."

H. It is possible that the description of the inability of the cavalry to move had reference principally to the landwehr cavalry.

S. What would you expect the landwehr cavalry to accomplish, hastily formed as it was and poorly mounted?

H. MARWITZ gives us an idea of it. During the armistice of

1813 he drilled his newly formed landwehr cavalry regiment in the presence of the King, near Berlin. In both charges all four squadrons bolted and ran square against the city wall. His majesty said, "it was a good thing that the wall stood so firm." Success in the face of the enemy could also only be gained by "bolting." The charge at Hagelsberg, described by MARWITZ, gives an idea of it.

S. We have once before discussed the point that with cavalry at all capable of bolting, it is a matter of accident in what direction it bolts, and that it is therefore not exactly reliable. We must keep in view, however, that in 1813 in the majority of cases, line and landwehr cavalry were united in the same brigade, reliable with unreliable cavalry.

H. To this fact may be due the contradictory reports as to the efficiency of the cavalry in these campaigns. But it is not to be wondered at, if after three such severe campaigns as those of 1812, 1813 and 1814 there remained little material that was fit for use. While on a General Staff reconnaissance, General VON REYHER once said: "In war cavalry must be guarded like the apple of the eye, or it will melt like snow in the sun." And he, General KATZELER's general staff officer, had experience in these matters.

S. Yes, it will melt if not properly trained in time of peace to overcome hardships without sustaining injury.

H. If it is considered how much good material in this melting process, in addition to the poor horses which soon break down anyway, is also lost by the enemy's bullets in battle, we may almost presume that after the campaign of 1814 nothing was left of the old cavalry.

S. It is not to be supposed that after 1814 there was more than here and there an officer's horse that was trained according to the old methods. But this could have been rectified if the traditions handed down among the men could have been kept from dying out. It is not probable that after 1814 a single private of the old time was in line. Of non-commissioned officers there were probably very few that had seen service under the Great King. How about the officers?

H. Officers who had entered the service in 1792, *i. e.*, at a time when the decline of the cavalry had already become apparent, were, after 1814, brigade and regimental commanders, like MARWITZ, WRANGEL, LEDEBURG, SOHR; some even were commanding generals, like ZIETHEN, BORSTELL; the captains and lieutenants of 1814 had almost all entered the service during the period of the greatest de-

cline of the cavalry. Of the old school there was but one general left, and that was BLÜCHER.

S. One man, no matter how great he may be, cannot alone and unaided, create a good cavalry in a short time; and he died soon after the war. For this art, the development of which requires many years, is more than any other dependent upon transmission by means of personal action, supervision and example, and cannot be produced as by magic, from instructions, orders or text-books.

H. Then we may presume that the Prussian cavalry as it was in SEIDLITZ's time, was destroyed in 1814. Hence we ought not to speak so much of the decline of the cavalry, as of its total destruction. This is the point on which I meant to come to an understanding with you to-day.

S. I cannot say you are wrong. What did the cavalry accomplish in 1815?

H. All detailed reports which we have of the battles of Ligny and Belle-Alliance, agree in this, that the cavalry as a whole did not begin to accomplish what is required by the most moderate demands. Charges were made resolutely. But we do not hear of successes gained by compact charges. The performance of security and information service also left much to be desired. How frequently had BLÜCHER's personal adjutant to leave the field marshal for patrol duty, because the latter was without accurate information (diary of Count NOSTITZ). All cavalry charges at Ligny were unfavorable to us. Whole regiments missed the proper direction, although carefully instructed by VON NOSTITZ, because they had been uncertain as to what was taking place in their immediate front. If we read MARWITZ's diary of the time succeeding the battle of Belle-Alliance, especially of the 20th of June, we see that here a body of 3,000 horse missed the finest opportunity "for a brilliant coup," because of defective and incomplete training. MARWITZ himself did not dare to carry out the simple movement of wheeling to the right by platoons and trotting past a village to the right, except by personally "preserving order in the column."

S. If at the moment of action the leader is to bother with the preservation of order among his troops, he cannot give that full attention to the leading of the whole, without which the use of the short-lived opportunities for cavalry action is not to be thought of.

H. Furthermore what did the cavalry accomplish in the pursuit after the battle of Belle-Alliance? It is a historical fact that it was principally infantry drummers advancing at the head of small groups of infantry, that repeatedly disturbed the rest of the French army

and caused it to continue its flight. General VON A., then a young cavalry lieutenant, told me that on the evening of the battle of Belle-Alliance, the cavalry to which he belonged remained a long time dismounted and inactive; that BLÜCHER rode up furious and, storming and raging, "got the cavalry on its legs," but it did not succeed in coming up with the enemy on that day. In 1815 BLÜCHER also said in a general order: "To part of the cavalry no thanks are due." (MARWITZ.)

S. No wonder if after 1815 everybody talked of the decline of the cavalry.

H. I only wonder that nobody said straight out and out, that cavalry proper no longer existed.

S. In 1816 BLÜCHER asked for the opinion of a number of cavalry generals on this point. (KOEHLER, "The Prussian Cavalry from 1806-1876.")

H. He himself considered it an established fact that during the preceding campaigns the Prussian cavalry did not accomplish what might have been properly expected. He concurs in BORSTELL's opinion, and only adds that he would prefer two or three inspector generals of cavalry to a single commanding general of this arm, which he does not wish to have separated by organization from infantry. It was very interesting to me to read this view of BLÜCHER in that particular book, because it is the only point on which I differed with my deceased friend KOEHLER PASHA.

S. BORSTELL declares the spirit of the cavalry from 1813 to 1815 to have been above doubt. He ascribes its inefficiency to defective organization and faulty use. In an organization of larger regiments and squadrons (six squadrons with 175 horses each) he hoped to have a favorable means for the manifestation of force. He also criticizes the fact that during the wars from 1813 to 1815 the cavalry had received no advice or instruction from the higher commanders. He wants closed charges, but little full gallop, much rallying, instructions as to the use of cavalry and its service in the field. He advocates the thorough training of the younger officers. He declares the landwehr cavalry unfit for most of the duties of this arm.

H. Among the generals whose reports KOEHLER gives, ZIETHEN is the only one who calls attention to the defective individual training of man and horse, and points out the importance of laying more stress on it.

S. Please take notice that he asks for command of the rider over the horse, not for fine school riding.



H. In battle he wants the cavalry kept together in masses and held back until the moment for launching it has arrived. Then he wants a closed charge, the flanks covered by troops following in rear, and three lines following one another at 600 paces distance.

S. He revived some of the principles of FREDERICK THE GREAT. But it is a pity he did not point out the necessity of daily work for the horses, and the getting of them into good wind, and the use of the cavalry in front of the army for reconnaissance. He also declares landwehr cavalry to be unfit, and wants squadrons of 200 horses, and one head to all the cavalry.

H. THIELEMANN does not go into details. He gained most of his experience in the French army, the cavalry of which in spite of incompleteness of individual training and the defects of hasty, new formations, yet could show successes gained by the timely use of masses. He mostly speaks of the use of masses only, and one might infer from his remarks that he was more favorably disposed to the landwehr cavalry than BORSTELL and ZIETHEN. He wants squadrons of 160 horses.

S. MARWITZ is the one that gives his idea most plainly.

H. He at least goes into all the details. His report does not seem to be due to BLÜCHER's request for it, because it was written a year before in France, in August, 1815. He too states the cavalry to be entirely unequal to the duties of the arm. He describes how the poorly broken horses under inexperienced riders became stiff in the campaign of 1814, and how the cavalry entered upon the campaign of 1815 on horses unfit for cavalry service, because none or but few remounts could be obtained during the short period of peace. He sarcastically describes a cavalryman, who is a poor rider on a badly broken horse, as "an unfortunate being delivered over to the freaks of a brute without reason." He says that the art of riding had "nearly died out" in the cavalry, and that in the whole army there was not one young officer who knew how to train a horseman from the beginning up. He criticizes the loose front into line, the custom of observing and judging the charge from a flank instead from the front, the loose riding, and places the Bavarian and Saxon cavalries far above the Prussian. It is true, he says, that there might be regiments which formed laudable exceptions, and counts those belonging to his brigade in 1815 among them. But he insists, that what he said, applied to the great mass of the cavalry. The landwehr cavalry he does not even mention. He calls for stronger regiments in order the better to raise and foster the *esprit de corps* by means of larger corps of officers, for better horses, the restoration

of the art of riding, more rapid drill, and wants the mounted combat to be more of an individual combat "until we again can ride and move rapidly," *i. e.*, individual riding. He further demands the frequent combination of regiments of the same kind and proposes a number of amendments to the drill regulations.

S. I am surprised that none of these old gentlemen bethought himself of the principles of the Great King of keeping the horses in good wind by daily exercise and hardening them to work.

H. It surprises me most on the part of BORSTELL, for as LEDEBURG tells us, he rendered good service with his cavalry in 1807, and should have learned to what enormous efforts cavalry must be equal in order to serve its purpose.

S. In the instructions drawn up by him in 1810, too much stress is laid in the first place upon sparing the horses during the exercises. What necessity then compelled him to say, he perhaps later on, was loath to revoke in order not to contradict himself.

H. It is possible and rational. We now have established the fact that after 1815 the celebrated Prussian cavalry had vanished almost completely. The next time let us investigate how it rose anew. And then you will concede that I was not wrong in admiring and praising the achievements of our cavalry of 1870, created as it was, out of nothing, and which had become efficient in spite of fifty years of peace.

S. I told you once before that I cannot and will not call our cavalry of 1870 poor. But this does not preclude our utilizing the experiences of the war of 1870 for perfecting our cavalry.

## THE DUTIES OF THE CAVALRY IN MODERN WARS.

BY SECOND LIEUTENANT C. D. RHODES, SIXTH CAVALRY, U. S. ARMY.

THE great range, marvelous accuracy, and rapidity of fire, of modern small-arms and field artillery (added to which has lately come a new and potent factor in the shape of smokeless powder), have revolutionized the war duties of all three arms of the service, and no one of them more than those of the cavalry. Without overstepping the limits of this paper by going too much into details, I shall attempt to give a resumé of the leading military opinions of the day, on the modern cavalry war duties, in the light of recent changes in arms and ammunition.

By way of preface, it may be said that nearly all the theories in regard to the wars of the near future are based on the experiences of the four last great wars, viz: the Austro-Prussian War, the War of the Rebellion, the Franco-Prussian, and Russo-Turkish Wars; and with the cavalry, we may even go back to the wars of FREDERICK THE GREAT. Added to the fact that so long a period, filled with important military changes, has elapsed since these great wars, the cavalry experiences were so conflicting at that time that we cannot draw very satisfactory conclusions from actual events, but must do more or less theorizing, to work out the cavalry role in its entirety. The next great war will probably prove to us how near our theories approximate to the truth. Meanwhile all the great military powers are experimenting, and studying, and drawing their conclusions, in order not to be found wanting when the great struggle takes place.

There seem to be two bones of contention regarding the modern use of cavalry; first, in regard to its use in connection with infantry supports; and second, in regard to its ability to break a firing line of infantry. The latter question will be discussed in its proper place. As to the former, the theories seem to vary between two

extremes. One class of enthusiasts contends for the self-sufficiency of the cavalry without necessarily combining it with infantry. They hold that however valuable infantry supports may be to cover the rallying of shaken cavalry, the unvarying union of cavalry with infantry supports, cannot but detract from the dash and boldness which have always distinguished the "*arme blanche*," and will consequently greatly impair its efficiency. The opposite extreme of enthusiasts believe in the organization of mounted infantry, to increase the mobility of the infantry arm and enable them to keep in touch with the enemy. This, of course, will be done at the expense of a corresponding decrease in the infantry and cavalry. Between these two extremes may be found all sorts of views, inclining to the one side or the other. But the majority in both arms seems to incline to the belief that the extensive organization of mounted infantry (call them what you will—cavalrymen or infantrymen), will surely be followed by a tendency on the part of these mongrel troops, to usurp the true functions that belong to each of the arms separately, and by transforming a good infantryman into a poor cavalryman, impair the efficiency of both arms.

Without attempting to discuss the matter, which I have mentioned only to show the drift of opinion of certain writers of the day, I will proceed with a description of some of the modern duties of cavalry. The greatest function of the cavalry in modern wars will undoubtedly be to act as a screen to the operations of the main army. HAMLEY, indeed, favors the employment of mounted infantry for this purpose. The Germans, however, basing their faith on the successful use of cavalry for this purpose, in the Franco-Prussian War, lay the greatest stress on the value of the cavalry screen, and there are very few modern authorities who do not agree with them. At the first bugle-note, then, of war, the great cavalry screen will assemble towards the hostile frontier and cover the mobilization of the army. If it can, by bold dashes into the enemy's country, disturb or prevent the mobilization of his forces, so much the better. The mobilization having taken place, and the advance having begun into the theater of hostile operations, it is imperative to have this considerable body of cavalry far in front, interposing itself as a veil to the forces behind it, during the march, halt or bivouac.

Supposing that the advance of the cavalry screen has *not* preceded the mobilization; then, as Prince HOHENLOHE says, the cavalry division must "be able in three days to gain a distance of from two to three days marches on the army. To do this, the cavalry

must march from twenty-five to thirty miles a day, while the army follows at a rate of from eleven to thirteen miles a day." In making these advance marches, the cavalry must not in any way impair its fighting efficiency; after gaining a distance of from twenty to forty miles on the main army, its marches may be shortened to correspond with those of the forces in rear.

The cavalry screen should rarely be nearer the main army than fifteen miles, and under most favorable circumstances, it may be advanced as far as from sixty to eighty miles. Having gained the prescribed distance, it should, generally speaking, act as a curtain to the forces behind—discovering the enemy's strength by causing a premature deployment of his forces; breaking through his cavalry screen and obtaining all the information possible; seizing advantageous points and holding them for the infantry and artillery; and, finally, harrassing and worrying the enemy in every possible way.

In an open country, the formation best adapted for a cavalry screen is, as SHAW describes it, "a moving outpost chain." Far in advance are the advanced scouts. Behind these and in communication with them, are "officers' patrols." Five or six miles behind these come the contact squadrons—their flanks two or three miles only from each other. Five or six miles in rear come the supporting squadrons; and eight or ten miles behind them is the reserve. The formation resembles a huge fan—the extremities overlapping the army's flanks. When any portion of the line is attacked, or upon approaching a hostile position, that portion of the screen directly in front is withheld, and, the two flanks advancing, the enemy is uncovered. In broken country and at night, "the moving outpost chain" is replaced by a system of patrols, which, though not so effectually preventing individuals from passing through the lines, guards the army against surprise. In either case, contact with the enemy having been once made, it should be maintained as closely as possible. The advanced scouts, patrols and reconnoitering parties should attempt to break through the hostile screen; and the enemy must all the time be closely watched to prevent the success of a like attempt on his part. The width of the cavalry screen thus formed will vary with the character of the ground and the position of the enemy; but it must not be so great as not to admit of information being quickly brought to the cavalry commander from the extreme flanks. The advanced patrols generally avoid fighting. Their main duty is the gaining of information concerning the enemy's supplies, forces, and dispositions, and as a rule they will fight only to prevent

a hostile reconnoitering party from gaining similar information. Unless the patrol be a secret one, it should not, on meeting the enemy, fall back and report, but should keep as near as circumstances will permit, reporting to the rear by means of couriers. It is truly said, that it is only after contact has been made, that the duties of the advanced patrols begin.

The Germans make a distinction between forced reconnaissances and reconnaissances of observation. The former seek an engagement in order to force the enemy into a premature deployment, while reconnaissances of observation have duties indicated by their name. In his letters on cavalry Prince HOHENLOHE comments on the fact that the reconnoitering and security services are not sufficiently separated. The reconnoitering patrols having for their object the obtaining of information, are pushed far to the front, in contact with the enemy; while the security patrols, having for *their* object the safety of the command, are pushed forward only a prescribed distance.

The "officers' patrols," which have been mentioned as following the advanced scouts, make reconnaissances of observation. They consist usually of an officer and a small squad of cavalymen. These patrols do not fight, but depend for safety on concealment—their marches often being made at night. Special cavalry reconnaissances are also often made, especially when there is the likelihood of a battle, having for their object the gaining of information as to the physical character of the ground; and they introduce into their duties, more or less, topographical sketching—varying in accuracy from a hasty horseback reconnaissance to a completely finished survey. For the planning of marches and location of camps, only such information as the character of the roads, fuel and water supply, fords, bridges, etc., is necessary. But in planning a battle, a cavalry reconnaissance which will secure a more or less rough map of the topographical features of the ground, will be of the greatest importance.

To go back to the cavalry screen, from which subject I have digressed in order to touch upon the closely related reconnoitering duties of the cavalry—a certain class of critics believe that although the cavalry screen should be left free to its reconnoitering duties, it should in all cases be followed by infantry supports. These are to advance quickly to the front and seize advantageous points—communicating with the advanced cavalry by means of "gallopers." However, our United States Cavalry, which unites all the advantages of the "*arme blanche*" to ability to fight on foot whenever

necessary, will not need infantry supports behind the screen, as is suggested for European cavalry. But it is yet a somewhat mooted point whether or not the advanced cavalry should be accompanied by horse artillery.

Turning from the screening and reconnoitering duties, we come to what is perhaps of next importance—cavalry raids. This subject is of special interest to United States officers, for the reason that it was by our own generals, on both sides, that this important use of cavalry was developed during the Civil War. Cavalry raids are detached operations of a cavalry force, and have for their object the destruction of supplies of all kinds; the striking at the enemy's communications, forcing him to detach a force to preserve his communication with his base; and last but not least, the gaining of information as to the enemy's strength, position, and sources of supply. The cavalry which is designated to make the raid, must combine "extreme mobility and effective fire action." In other words, it must be able to move quickly over considerable distances, protecting itself from large forces of the enemy both by fighting and running away. Hence, since it is by the nature of its duties, made independent of aid from other arms, it must be able to fight on foot when necessary, and this, by the way, our cavalry can probably do much better than the cavalry of European nations. Raiding cavalry must be lightly equipped, and encumbered as little as possible with baggage. Whenever possible, it will depend upon the country through which the raid is made for its supplies.

And right here a few words may be said as to modern views on the use of cavalry dismounted. With all European powers, Russia alone excepted, there is the strongest prejudice against the use of cavalry dismounted. In offensive movements, they dislike putting so few effective men from a cavalry regiment on the firing line—every fourth man being a horse-holder. They claim that no carbine, however well constructed, can equal an infantry rifle, and that to make a first-rate cavalry out of a recruit, not enough time can be spared to make him shoot as well as an infantryman. Then again, the Prussian cavalryman's allowance of ammunition is limited to twenty cartridges, while the infantryman has eighty. Hence they make a strong point as to the difficulty of supplying the dismounted cavalry firing line, when it is already so difficult to supply the infantry line, supplied as they are with sixty more cartridges each than the cavalry, and armed in either case with magazine



guns. In defensive action the European critics allow more latitude in the use of dismounted cavalry.

The dismounted work of our cavalry is an evolution of the Civil War, and with so much Indian fighting since that time, and the frequent stationing of cavalry at infantry headquarters, there has been a growing tendency towards slighting the legitimate mounted work for the sake of the dismounted. So much so in fact, that some critics have designated the American cavalry as mounted infantry. Although this was doubtless true with the raw cavalry regiments, organized during the first years of the war, it was not so in the last years, and has not been so since. There is doubtless in our service a tendency towards too much dismounted work, but our ability to use our carbines at such times, will not only not impair our efficiency as cavalry, but rather increase it, provided we do not neglect our legitimate mounted duties. And armed as we soon will be with a magazine carbine, and as we ought to be, with an improved saber and pistol, our efficiency should be still further increased.

And now as to the present role of cavalry upon the field of battle—a much discussed problem which is never to be really definitely settled until the next great war takes place.

"Cavalry moving out to an attack is now subject to accurate and destructive fire from artillery at all distances up to 3,000 or 3,500 yards (about two miles), and in some cases even greater; to machine-gun fire from 1,500 to 2,000 yards, which at distances less than 600 to 700 yards becomes most deadly." (MERCUR.) Added to these horrible engines of war, is the modern magazine rifle, an awful weapon against cavalry in the hands of expert marksmen. With these improvements in artillery and small arms, has come no corresponding improvement in the saber, the "*arme blanche*" of the cavalry, and this of course has caused increased attention to be given of late years to the type of carbine used and to acquiring skill in its use. From these considerations, and the vulnerability of cavalry due to their great mass, many military experts have even gone so far as to say that the day of cavalry on the field of battle is a thing of the past.

Before discussing the subject, a word as to the distinction between the cavalry division and divisional cavalry. The former is an independent division, under the direct orders of the commander-in-chief; while the divisional cavalry is a separate force, attached to a division of infantry, and under the immediate control of the division commander. As the cavalry division is a necessity, while the divisional cavalry is only a desideratum, modern authorities agree that

the cavalry division should never be broken up in order to create divisional cavalry. This was the point that General SHERIDAN labored hard to make understood when, upon being ordered to the Army of the Potomac, he found the immense cavalry force split up into dribblets.

This point understood, we can proceed to the battle duties of modern cavalry. In the first place, then, before each of the great battles of the future will occur a cavalry battle, in comparison with which the cavalry fights of the past will sink into insignificance. As the two great cavalry screens of the opposing armies come in contact, each will strive to gain the mastery. The objects to be gained by this cavalry battle are, first, to gain time for the masses behind to deploy into line of battle; second, to hold on to advantageous points, suitable for artillery and infantry defense; third, the moral effect, the depression of spirits on the losing side, and the corresponding impetus given to the winning side; and last, to prevent the enemy from participating in the main battle, especially in the retreat or pursuit which will follow. No one can doubt that this grand cavalry fight will give every possible opportunity for all the skill, daring and bravery, which have distinguished the cavalry of the past.

As the battle progresses, and the infantry and artillery on both sides deploy, the firing will be inaugurated by the artillery, and the position of the cavalry division must change. Falling back, it will be concentrated on the flanks, or held in rear, ready to be launched upon either flank as occasion may require. The dangerous space of an object six feet in height, against infantry fire, is now at least 550 yards; and in order to be perfectly safe from the enemy's fire, the cavalry designed to take part in the battle must remain 2,000 yards from the enemy's firing line of infantry, and 4,000 yards from his artillery line. At these great distances, lying in wait as it were for an opportunity to strike, it will take a comparatively long time to pass over the intervening ground, even if the opportune moment can be distinguished at so great a distance; and during the precious time employed in passing over the ground, the critical moment may have flown. The extreme distance will, without a doubt, make the enemy's movements vague and indistinct. Hence, it will always be well, if possible, for the cavalry to be placed *nearer* the enemy, provided it can be protected from fire by some accident of the ground, especially if its commander can watch from adjacent high ground the progress of the battle. The absence of smoke, due

to the use of smokeless powder, will greatly facilitate his observations wherever he may be.

In the immense line of battle which modern armies will form as they advance in extended order, there will doubtless occur many breaks, due to the conformation of the ground, or to the bad judgment of those in command, where the eye of the cavalry commander will discover artillery unsupported by infantry. And here will probably occur opportunities for the divisional cavalry to perform excellent service. On the flanks the cavalry division, to which, perhaps, has been added the divisional cavalry, will, in its *offensive* role, strive to creep around the enemy's flanks. If the enemy is equally vigilant, it will here meet his cavalry, and a cavalry fight on the flanks may take place while the infantry and artillery are both occupied with the troops in their immediate front.

Many prominent military writers accept as an axiom the dictum that cavalry cannot now attack unshaken infantry. But it would be more nearly correct to say with Captain MAUDE, "A frontal attack by cavalry on steady infantry, with their fire controlled, and well disciplined, will fail." The Germans now hold, as one of their latest views, that cavalry must be *prepared* to charge even unshaken infantry; "for who," they say, "can tell whether infantry is unshaken or not, until the attempt has actually been made." As a matter of fact, the same conditions that have made it hazardous for cavalry to charge infantry, have also made it quite as likely that cavalry will find infantry shaken and demoralized.

Smokeless powder, while exposing for a long distance the charging cavalry to the aim of the infantry, will, for a similar reason, make the moral effect of the charge much greater than if wholly or partially concealed by smoke. Men's nerves will fail them, and their firing grow wild, as the line of horsemen, the earth fairly trembling under the shock, come sweeping down upon them; and the absence of smoke will cause the *direction* of the charge to be made to better advantage. And, under the rapid advance of the charge, it will also be difficult for men to preserve nerve enough to change their sights. An examination of muskets picked up on modern battle-fields, after a cavalry charge, has shown the majority of the sights to have been adjusted to long distance ranges, the owners having evidently been too much excited to notice the difference.

Again, the provisions made for supplying ammunition to the infantry, under present methods, are totally inadequate, and with magazine guns the waste of ammunition will be enormous. Cavalry,

therefore, will often charge infantry which have expended their last cartridges.

Furthermore, it takes more hits to put a cavalryman out of action than an infantryman, for the reason that a cavalryman, even when badly wounded, can finish the charge, supported by his horse. As to the greater mass of the horse and his rider, the effect of the small caliber rifle would seem, from recent experiments (conducted at Aldershot on the body of a pig), not to be as *immediately* fatal to animals as the larger caliber. That is, it may in the end, cause a greater number of fatalities, but not until the charge is finished and its effect produced. Its great range and flat trajectory will, however, cause many casualties in charges made in double rank, a formation still held in favor in most European armies.

As to *unshaken* infantry, although in the majority of cases cavalry will not *knowingly* charge such a force, yet it has been done, and probably will be done again, in order to sacrifice the cavalry for the sake of gaining time for reinforcements to arrive on the firing-line of the friendly infantry, and also, at times, to give the latter a much needed rest, after exhausting hours spent upon the firing-line.

After the great battle has been fought, the cavalry will again be called into requisition. In case of success, the victory cannot be complete unless the cavalry engage in pursuit; falling on the flanks and rear, attacking isolated and unsupported artillery, cutting off stragglers of all arms, and otherwise harrassing and contributing to the demoralization of the already shaken enemy. In case of defeat, the cavalry will be the intervening medium between the hostile pursuing cavalry and the main army, guarding the flanks and rear, and protecting the communications and supply-trains. Its presence will, if it does nothing else, rest the troops which have participated in the battle.

In either case, great cavalry battles will probably take place, after the battles of the future, as they surely will before. Whether the result of the main battle be victory or defeat, that side which has sacrificed or crippled its cavalry during the action, will find itself at an immense disadvantage in its subsequent operations. As JOMINI truly says: "If an army be deficient in cavalry, it rarely obtains a signal success, and experiences great difficulty in its retreat."

It would seem, then, to those who have considered the matter carefully, that if the action of cavalry has, by the improvements in arms and ammunition, been narrowed upon the field of battle, its

*entire* field of action has been increased. It still remains as important an arm as it was in former days, and in future battles we shall expect it to again achieve the glorious results that it did in the time of **FREDERICK THE GREAT**. But to all of us who are over-enthusiastic about any one branch of the service, it will be well to remember the words of Captain **MAUDE**: "The efficiency of the army may be looked upon, not as the sum of the efficiency of the three arms, but as their product; when, therefore, there is a tendency to under-rate the efficiency of one arm, the army as a whole must suffer."

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In the preparation of this paper, the following professional books and papers have been consulted:

MERCUR's "Art of War."  
 SHAW's "Elements of Modern Tactics."  
 HAMLEY's "Operations of War."  
 MAUDE's "Organization and Tactics."  
 Journal of U. S. Cavalry Association (fourteen articles).  
 Journal of Military Service Institution (seven articles).  
 United Service Magazine.  
 GALL's "Modern Tactics."

## THE CAVALRY HORSE.

BY SECOND LIEUTENANT W. S. WOOD, TENTH CAVALRY, U. S. ARMY.

A GREAT many articles have been written on the cavalry horse, the type we have now, and what we ought to have. Also on the method of obtaining horses for the cavalry service. By the system at present in vogue there is great variation in the appearance of our cavalry horses, and in the extent to which they meet the needs of our service. There are a very few good animals fit, or having the natural qualities to make them fit for all the uses to which a cavalry horse is put, and capable of acquiring all the accomplishments that such an animal should have. There are others nothing more nor less than heavy draught animals, undoubtedly fair horses for this particular work, but they are not, and never could be made to be, even inferior cavalry horses. Another class is fit for nothing but light wagon horses; the remaining ones are about on a par with the average street car horse in this country, or even worse.

The horse described in Army Regulations, paragraph 1126, is undoubtedly just what we want, but we do not get him. Presumably then this class of horses is not always obtainable, at least not in large numbers. If it is desired by the Government to have good, uniform horses, such as it prescribes that boards shall buy, then there is something wrong with our system of procuring horses and it should be changed. But is the change necessary at once, or rather is it the only change that should be made?

The experience of the writer is that as a rule while the enlisted men are good riders, they are not even fair horsemen. The trouble is with their hands, which are heavy, and with their method of handling horses, which is rough. Few soldiers have the delicate touch on the bit that is an absolute necessity to good horsemanship. Some good riders are good horsemen, but all good horsemen must of necessity be good riders. Starting with correct principles, and

good, capable instructors who are horsemen, most recruits would undoubtedly become both good riders and fair horsemen. The rest could be dispensed with in the cavalry service.

In their handling of horses our soldiers are not well trained. A horse should not be handled as a Mexican handles a burro. He should be handled coolly, kindly, and firmly. The brain of the man should be more active than that of the horse. Brute force on the rider's part will never win. The horse is the stronger of the two, and will conquer at that game or be ruined. If the rider becomes angry he should be sure not to punish the horse. Better dismount until he recovers his temper. Punishment at that time will do much harm and no good. A man who cannot control his temper has no business in the cavalry service. If the horse stops the feet should not be thrown out until the leg is nearly straightened at the knee, and then the spurs thrust in as though the rider were endeavoring to break the horse's ribs. I have seen a soldier while holding a young colt that had never been bitted before, become angry, and jerk with all his strength on both reins. Men should not shout at the horses but should speak to them quietly.

Some of the poor horsemanship comes from having bad seats, and some from timidity. A timid rider will ruin any horse. There are many of these faults which are very noticeable. In order to remedy them cavalry recruits should be kept at least one year at the depot. Competent instructors should be placed over them, and they should be taught to ride, and to ride well. They should first be taught to ride bareback, arms folded, the horse being either led by a trained cavalryman mounted, or preferably be put on a longe. They should have two drills at this each day until they have acquired the proper seat, and grip of the knees and thighs. This will of course take time, but the instruction should be thorough. After this the bareback drills can be replaced every other day by drills with saddles, the longe being used as before, arms folded, or preferably a drill every morning bareback, and one later in the day using saddles. This will teach the men to apply the principles they have learned. After they are perfectly at home bareback and in the saddle at the walk, trot, and gallop, and have the correct seat, they should be given the bridle. Not until then, for the reins should not be used as a support to the recruit while he is being taught the proper seat. They should begin with the snaffle bit and then use the curb; should be practiced in keeping a light touch on the horse's mouth, and in guiding the horse by the rein. By this method the recruit will keep his seat entirely independent of the reins. The in-



structor should carefully watch each man, and make him keep a touch on the horse's mouth as though the reins were thread, light as possible, but firm. This supposes of course, that the horses are well trained, unspoiled cavalry horses, with a proper bit, and a mouth not hardened by abuse. The use of the spurs should next be taught, when and how to use them, both to punish the horse, and to assist the hand in guiding him. At the same time the men should be cautioned against their abuse. When this is completed the recruit is a good rider and a fair horseman, and ready for the mounted drills, and will learn them quickly and easily. The dismounted drills, manual of arms and saber exercises on foot, of course, can all have been taught him while he has been learning to ride. Three drills a day of an hour each are none too many for any soldier. If, at any time during this training the man shows his inability to become at least a fair horseman, he should at once be transferred to the infantry. The recruiting depots should be of sufficient size to receive the accumulation of recruits that would result from a year's service at the depot.

And leaving this subject for a moment, more attention should be given to recommending cadets from the graduating class at the Military Academy to the cavalry. No officer who cannot ride, can instruct men in riding. A cadet who does not ride fairly well, and is not a fair horseman, and a good many cadets are not, should not be recommended for the cavalry, no matter whether he stands number one or number fifty in his class. They should be graded in horsemanship and riding, and the recommendations for cavalry service should not include those below a certain point of proficiency in these branches.

To make recruits good horsemen, then, would be the first change before the horse is improved. It's all well and good to say that this training might be given to the recruits after joining their regiments, and perhaps some small part of it might be and is then given, but it is usually impracticable to do this for the reasons among others that recruits join a troop a few at a time, and at all seasons of the year; are detailed for duty in the Quartermaster's Department after four or five weeks' service with the troop; the climate of some posts is, during a good part of the year, unfavorable to outdoor exercise, and many posts are lacking in riding halls and other facilities. This all points to the necessity of a general plan.

The horse's tongue and especially the bars are delicate, sensitive organs. The slightest touch is felt. It would seem that putting the present encumbrance, called by courtesy a bit, in the mouth of a

horse was a sufficient imposition on the animal, but when, in addition, a man with a hand like iron is added, what wonder is it that some horses, and often the best ones naturally, spirited, high strung animals, contract vices such as running away, rearing, falling over backwards, lying down as soon as saddled, becoming restive, etc., to say nothing of being absolutely ruined by having their jaws so fractured as to make it necessary to remove fragments of the bone, and having their tongues cut half through.

It is a very common thing to see cavalry horses bleeding at the mouth when returning from drill, due to the severity of the bits, poor riders, and the incomplete training of the animals. As between the two cavalry bits furnished by the Government to the cavalry service to-day, the curb and the snaffle, an unspoiled horse could be restrained and handled far better with the snaffle than with the curb, when the injury to his mouth and the pain caused him by the latter are considered.

I will cite two instances of the improper use of curb bits that have come under my personal observation. One, a horse which had the reputation of being a bad runaway. He was ridden with a heavy curb bit, and when running away cared apparently no more for the curb bit than if it had been the nose-band of a halter. The horse changed ownership, the curb bit was dispensed with and a common snaffle used, and this afterward changed to a rubber bar bit. From the first there was no more trouble; the horse could be easily checked at speed, and he never ran away while these bits were used. The second case: The writer while a cadet at West Point was riding a horse which was a bad runaway. The squad was out on the road and returning toward the Academy. A Government curb bit was being used. The horse was well up toward the front of the column and fighting for his head, necessitating a strong pull on the reins to hold him. My arms getting tired, I gave a strong, straight pull on the reins in order to take him to the rear of the column, where I thought he would go more quietly. According to the theory of the curb bit he should have stopped. Instead of that, he shot out as if he had been suddenly spurred or struck with a whip, and would have run away had not a cadet in front of me caught him by the rein as he passed. This was evidently caused by the fact that the curb-strap hurt him more behind the jaw than did the bit in his mouth, thus causing him to spring forward to get away from the pain. This is well illustrated in Major DWYER's work on "Bits and Biting."

The second change before we seek to get a more perfect grade

of cavalry horse, should be to get a good cavalry bit, and whatever bit is used, it should be made by measurements to fit the horse for which it is intended. Each horse should be so provided for when he enters the cavalry service. Our horses are bitted as though all cavalry horses were made with one of three sizes of mouths for which three sizes of bits are furnished. If the bit does not fit well it is the fault of the horse for not having the right-sized mouth. As to the kind of bit we should have, one made on the principle of the Dwyer bit, fully explained in Major DWYER's "Seats and Saddles, Bits and Biting," seems to me the best article that can be produced. The method for taking measurements for the same is also explained, together with an instrument for this purpose. I have also seen the Dwyer bit in actual use on a young horse, and it seemed to work admirably. These bits could be manufactured to fit each horse at little, if any more, expense than is the present contrivance. As to the use of two reins on this bit, curb and snaffle, if a man is a perfect horseman the curb will give the horse no more pain than will the snaffle, and should habitually be used. We cannot, however, expect to get soldiers who are more than fair horsemen, and I would therefore suggest that both reins be used - the snaffle for jumping hurdles, passaging, turning on fore feet, etc. I think this better than having a separate snaffle bit. The present headstall should be done away with. Our halter should be provided with a brow band, and the bit should be attached by two snaps to the halter. This allows it to be easily slipped from the horse's mouth at any short halt a column may make, in order that the horse may graze or drink.

The horse we have now in the cavalry service is plenty good enough for the present bit, and for the horsemanship of the present soldier. Let us suppose, however, that we have a really good bit, suitable to our needs, and well trained recruits who are fair-horsemen. The next step might well be toward getting more typical, more uniform and better cavalry horses; and these should be bred by the Government. The thoroughbred horse is undoubtedly the leaven that leaveneth the whole lump as far as horse-flesh is concerned.

The trotting horse is not the cavalry type as a rule, standard bred or otherwise. The Arabian is not a match for the modern thoroughbred. The Hackney approaches closer to the type, but as he gets his suitable points from thoroughbred blood combined with careful breeding, and has other points that are undesirable, why not go at once to the fountain head. In intelligence, pluck, type and speed they cannot be approached. They improve all blood. In

looking at the trotting record it will be seen that nearly all of the trotters who are at the top notch have thoroughbred blood, and close up. For example, the dead "Palo Alto," who at the time of his death, held the stallion record of  $2:08\frac{3}{4}$ , was half-thoroughbred, being by "Electioneer" out of the thoroughbred "Dame Winnie" by "Planet." It is the thoroughbred blood that gives them their game-ness to preserve their speed. We do not need full thoroughbreds. Half-bred horses will be good enough. They will stand all climates as well as our present horse, I do not doubt. There are many thoroughbreds in Montana, also in Texas, the two extremes of climate. I know a horse in Montana, a thoroughbred grandson of "Lexington," which has run out on the range during the winters with a herd, and now is in good shape at the age of eighteen.

Taking the average service of a Government horse as ten years, and including the horses at West Point, (and by the way, horses used by the cadets for riding should for obvious reasons never be used in the artillery harness), there would be required every year for the service, in the neighborhood of 700 head. Allowing for half of the animals foaled to be fillies, part of the mares each year to be barren, and part of the foals to not come up to the standard in shape, size, color, etc., in which latter case the mares bearing them should be at once disposed of, also for deaths, we should require at least 2,000 brood mares. Separate, small farms would be better than one large one. These farms should be located preferably in Kentucky, Tennessee, Virginia, and California, because these States are naturally the best suited of any in our country for raising horses. Probably a good distribution would be one in Virginia, five in Kentucky and Tennessee, and four in California. The farms in Kentucky and Tennessee could supply the more central troops. The one in Virginia the more eastern troops, as at Fort Myer and West Point, and those in California the western troops. There are numbers of other States, however, that would do.

Each of these farms should have about two hundred brood mares and five stallions, and they should be presided over by a well qualified officer as superintendent, with one or two others, equally well qualified, as assistants. Each one should also be supplied with a good veterinary surgeon. They should have the necessary buildings, paddocks, stables, hospitals, etc., and be well supplied with medicines and instruments, and all the modern horse appliances necessary. Those of the recruits above mentioned who proved to be real horsemen, and were best qualified for handling breeding stock and young animals, could be transferred to these farms, and there

should be at least one well-trained civilian horseman at each place to further instruct them in handling the youngsters. After the right men for all these places had been selected, the details should be permanent, and not changing every year or so, for that would partly nullify each man's efforts, and the good done by one might be undone by the next.

If sufficient land were purchased, a part of the grain and hay consumed at each farm might be raised on the place, an officer or a civilian, well qualified, having the immediate control of this department, and hiring a number of laborers at the proper season of the year for this work alone. Otherwise, the grain and hay could be bought.

The mares, good, close-coupled, big-barreled, stockily built animals (and I do not mean of the draught type), with good necks and heads, from three to ten years old, could be bought within greater or less distances from the farms for prices ranging from \$100.00 to \$200.00, the mares to be bought by competent officers and from the original owners, not from dealers who make their commission on each animal. They should have large bodies, long, sloping shoulders, and clean cut heads, necks and legs, the legs rather short than long, however, and the pelvis should be large. The stallions should be good, short-backed, well-built, intelligent thoroughbreds, and from a courageous and sound family. These could be procured in horses not quite fast enough to race, for a race horse is not what is wanted in the army, the idea being to get more of the thoroughbred shape, intelligence, endurance and courage, with the best blood possible, as the former qualities all come with the latter. The animals could be procured at the annual public sales, at from \$1,000.00 to \$3,000.00 apiece. They should also be bought by a man who knew what he was doing, and all the animals—mares and horses—should be inspected thoroughly by a good veterinary surgeon before being purchased. Of the foals, the fillies which were not wanted as brood mares should be sold at annual public sale. This would be of great benefit to the country at large by improving the average stock. Moreover, many valuable animals would be thus sold, and the prices realized should go some way toward paying the expenses of the establishments.

In this connection I will make a quotation from the "*Spirit of the Times*" of December 17, 1892. In commenting on the remarks of a Canadian writer, this paper says: "The haphazard system which results in 'half heavy colts and weedy nondescripts' could be more than profitably changed by means of careful selection and

the employment of the best materials. The unenlightened condition of the average farmer's mind is largely responsible for the present state of affairs. He has neither the knowledge of what his customers, the dealers, want, nor has he mastered even the elementary principles of veterinary science, which would not only make him capable of judging conformation but also of detecting unsoundness.

\* \* \* \* Very rightly the writer in question advocates the use of the thoroughbred sire, and though he somewhat overestimates the volume of the demand for superlative action, he hits the right nail square on the head when he speaks of the value of blue blood tracing directly to the stud-book, in hunters. For horses such as he instances, gotten by thoroughbred sires out of big road mares, there will always be a ready market, unless, as seems impossible at the present time, society should turn its back on hunting and kindred sports. \* \* \* \* Provided thoroughbred sires, of good conformation and free from radical or hereditary unsoundness are crossed with mares carefully selected, the product can scarcely fail to be eminently marketable animals, that will sell for several times the prices fetched by what the writer quoted dubs 'gummy-legged, brittle-hoofed vulgarians.' \* \* \* \* No class of animals is so sure of a welcome reception as those indicated above."

The stallions, judicious breeding being assumed, would change often enough by death to change the blood. Stud-books should be accurately kept. To lay down a method of handling the young animals would take an article by itself. To be brief, the colts should be handled from birth, thoroughly halter-broken and well fed. While yearlings, they should be longed, practiced in jumping, and accustomed to saddle, bridle and bit, beginning with a snaffle and working up to the curb; as two-year-olds, they might be ridden some. They should also be systematically trained to stand the noise of firearms. About the biting time they should be drilled some in the BAUCHER exercises, but not much, as this system tends to shorten the steps of a horse at the walk, trot and gallop. In fact, they should be given an education that would make them docile and fearless animals, with all the other qualities of a good cavalry horse. At the age of five years, supplied with well-fitting curb bits, they will be ready for assignment to regiments, and should be assigned directly from the farms according to color. By this plan we would obtain then a fixed type of horse, of intelligence, endurance and breeding, all of which always tell, both in horse and man, the animals sent out from central places to the regiments already sorted as to colors, and we should have docile, fearless, trained cavalry horses, instead

of green, raw, untrained brutes. The expenses of this plan would for the first few years, of necessity, be great. After that they would probably be less than under the present system; but the great improvement in our horses that would result from this plan, would more than justify its first extra expense.

With these advances another thing would be well. The veterinary surgeons with the different regiments should be men well up in their profession, and paid accordingly. They should be required at certain seasons of the year to give lectures on the anatomy of the horse, its diseases, etc., which the mounted enlisted men should be required to attend, and which the officers might also attend with profit and pleasure. The officers would of necessity, through pride, if nothing else, study up more on this important subject, which with our Indian service, has been and will be yet, one of the first requisites of a good cavalryman, viz: to be able to take intelligent care of his horses both in health and sickness. These changes made, they should be followed by a different way of drilling and of arranging the drills of horses and men, from that which the writer has seen in practice at every post at which he has been stationed. This innovation will naturally come about as the troops are more and more concentrated. Better stables, good riding halls at the northern posts at least, and hospitals for sick horses, well appointed and supplied, should also be provided. It would then no longer be necessary, which it not uncommonly is at the present day, for a veterinary surgeon to buy medicines and instruments out of his own pocket for the treatment of public animals.



## THE FEEDING, WATERING AND SHOEING OF THE CAVALRY HORSE.

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BY GERALD E. GRIFFIN, D. V. S., VETERINARIAN FIFTH CAVARY, U. S. ARMY.

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THERE are four different kinds of food furnished to the service for the use of cavalry horses and mules, viz: Oats, corn, bran and hay, and a liberal allowance of each is supplied; the hay when inspected by a competent judge upon its delivery and properly stacked, is always good. There is little fault to be found with the oats and bran, except as to one or two points; but upon the corn it is determined to make a deliberate and premeditated charge, being of course restricted to a regulation gait; "it being not our style to produce needless pain, by statements that rile or that go agin the grain."

Why is it that those who cater to the horse in the service persist in furnishing corn for part of his ration when all experiences in this connection point to the conclusion that it is not the correct diet, partly or wholly, for solipeds?

Having given this question considerable thought, and having discussed it with those who are in a position to be practical authorities on subjects of this kind, the writer has been forced to one of two conclusions, and these are that corn is fed either for political reasons or upon the score of economy. If corn is fed for political reasons it is because corn is a national production grown in almost every state of the Union, and as a consequence, it is presumed that should the service refuse to purchase and use it in large quantities, the loyal representative of the Seventy-first Congressional District might, at the instigation of his corn-raising constituents, make inquiry in the House why it was that the fighting establishment endeavored to cast a slur upon this national production; and by this inquiry brew more or less trouble in the horse's supply department.

If corn is fed for economical reasons, it is because it is cheaper

than oats, and because there are so many more pounds of it to the bushel; the deaths it is responsible for among cavalry horses and mules is, as a matter of course, never taken into consideration, but it is safe to say that were the prices of the horses and mules killed annually by corn added to the price paid for the corn itself, it would be found that the same would purchase more than a sufficiency of oats, and that the amount saved annually in dollars would greatly exceed that saved at present.

And why is it that corn is not a proper food for horses and mules?

In the first place, corn is a fat producer, and so far as known we are not feeding horses and mules for the abattoir. Corn does not contain sufficient mineral salts wherewith to build up the bone—a very serious disadvantage.

Corn is difficult of digestion, even if cracked by a mill; we all know how it is cracked in the service—whole; even if mills are furnished they wear out inside of two years, when others have to be purchased to replace them. The price paid for mills could with economy be invested in oats.

Corn is deficient in nitrogenous matter, therefore energy is at a minimum when this cereal is fed.

Corn wears out the animal's molars so rapidly and so irregularly that the veterinary blacksmith's shop known among the "veterinary tools" as dental appliances, are in constant requisition to regulate the corn masticator's teeth, and the dental work has to be attended to so frequently that the unfortunate quadruped is often compelled to "gum it" in his latter years, and is condemned as unserviceable on account of defective molars, or because he cannot chew corn.

Corn is productive of intestinal pains, known popularly as colic, and is a deranger of the digestive apparatus, so much so indeed that the quantities of opium, ether, oil and aloes used to counteract its effects in this direction are astonishing. The money applied to the purchase of anodynes and cathartics could, with enomony, be invested in oats.

Corn as a food for a cavalry horse is the abomination of cavalrymen; it is not used in even third-class livery stables; it is tabooed by the express and horse-car companies. It is a capital feed for hogs, steers and chickens intended for market, as it produces fat rapidly and in abundant quantities, but as a forage or part forage for army animals it should certainly be discontinued.

The writer is satisfied from several years observation that the fatal cases of colic and acute indigestion in horses and mules are

with scarcely any exceptions due to corn, and that cases of chronic indigestion are in great part due to the use of the same food.

Do you know of a case where private horses in the service were fed corn if oats were obtainable? And why not? Because the owners of private horses knowing full well, from actual experience, the relative values of corn and oats as a food for horses, invariably feed the latter whenever it can be obtained, some of them even going so far as to feed troop horses so much less oats so that their own mounts may have a continual supply; and where a troop is fully officered and those officers mounted, it will have at least six private horses on a continuous diet of oats; this of course compelling the troop horses to eat so much more corn.

Composition of some of the cereal grains (DALTON):

	<i>Nit.ogenous Matter.</i>	<i>Starch.</i>	<i>Dextrine.</i>	<i>Fat.</i>	<i>Mineral Salts.</i>
Barley .....	12.96	66.43	10.00	2.76	3.10
Oats .....	14.39	60.59	9.25	5.50	3.25
Corn .....	12.50	67.55	4.00	8.80	1.25

Barley, it will be seen from the above, very nearly approaches wheat in its composition, and is almost as severe on the digestive apparatus; as a food for horses it is out of the question, except along the Mexican frontier where it is raised to better advantage than other grain. It should, however, be fed in small quantities and three times daily.

Corn, it will be observed, contains too much starch, too little sugar, too much fat, and is very deficient in mineral salts, the latter objection unfitting it as a food for growing horses whose bone is not yet fully developed.

Oats have all the ingredients in good proportion that go to make up a first-class food, and from the amount of cellulose it contains, 7.06 (while corn contains only 4.50) an animal can subsist longer upon it without hay. It requires a less amount of mastication and the quantity of saliva required to prepare it for the stomach is less than for corn, the latter being hard and flinty, thus leaving more saliva for the preparation of the hay taken in.

Of course it is understood that the remarks in this paper—except as to shoeing—apply to horses and mules in garrison. In the field anything that turns up in the shape of forage is acceptable, but while in garrison we should endeavor to so prepare and strengthen the digestive organs of our animals that they will be able to resist a corn diet when forced to it by the exigencies of the service, and this

fortifying of the digestive apparatus cannot be accomplished on a corn or part corn diet.

It will be thought by some that the mule should not be restricted entirely to oats. The mule is certainly a peculiar animal in a great many respects, and his digestive apparatus is considerably harder than that of the horse, which is why he does not show the ill effects of a corn diet so plainly. Nevertheless it is thought that a mule would do better work on oats, and the veterinarian would receive fewer calls to treat cases of unnecessary colic. Verily, so far as the corn ration is concerned, the noble horse of DEAN SWIFT's creation has fallen into the hands of the yahoos.

The oats furnished the service by contract at the majority of army posts are exceedingly dirty, so dirty, in fact, in many instances, that it would appear as if the contractors were required to furnish a certain quantity of sand and refuse with each load delivered. Government contractors are proverbially honest and straightforward business men, so it is presumed that the oats when purchased by them are of the best quality and reasonably clean; the dirt, however, works its way into the sacks in transit. Somebody has said somewhere that a person during his life is bound to consume a peck of dirt. If this is true of ourselves, who take extraordinary precautions to have our food clean, how many pecks of dirt does a cavalry horse consume when fed on the average oats supplied by contract? A peck each month would not be too high a calculation. The oats as well as the hay should be inspected by a competent judge before being received. The average quartermaster's sergeant, especially if he is an ex-infantryman or artilleryman, knows little or nothing about grain or hay. A sack of grain or a bale of hay weighs so much, and that ends the matter so far as he is concerned. Oats have been furnished to garrisons in the service—and at reasonable contract prices too—that would not be accepted as feed by private stables as a gift unless there was none other to be had.

The bran furnished the service is of an inferior quality, and acts as a laxative by irritating the intestines; it should not be fed more than once a week, and not at all in the summer season, where the animals have free access to grass.

Salt, the most important of the mineral constituents of the body as regards its active part in the phenomena of nutrition, is not supplied in sufficiently large quantities, and what little is furnished is still further reduced by injudicious management, due to the usual false economy manifested by the authorities in everything pertaining to the horse. There is no distributing feed-box or wagon fur-

nished, consequently one is improvised by the inventive genius of the stable men. It generally consists of an old dry-goods box, mounted on a pair of antediluvian style of wheels; the dry-goods box in question is invariably cracked in several places, and possesses numerous holes and loose joints, and into this receptacle are dumped two or more sacks of bran, and on the top of this three-fourths of the week's allowance of salt. Water by the bucketful is dashed over the whole, the salt is dissolved, the water percolates through the cracks and holes on to the ground, carrying with it any nutritious matter contained in the bran, and also a certain quantity of the salt. The animals receive the residuum, fondly believed to be a bran mash. We have become so accustomed to this kind of thing, as we have to many others, by constant association, that we fail to be struck by its lamentable absurdity. Oftentimes when the corn runs short (the bran never does), there is a sack or so of bran mixed in with the corn and oats, and this is considered by some an improvement upon the simple bran mash. Some of this compound enters the stomach unmasticated, and we know it is the portion easier of trituration.

It has been proven that the amount of salt voided by a healthy man in twenty-four hours exceeds half an ounce; therefore a man takes into his system each day more than half an ounce of salt from all sources; it is placed in his bread, soup, meat, etc., in addition to what they naturally contain, and he takes it directly from the table. The Medical Department, knowing the wants of the system in this respect, have caused to be issued to each man over half an ounce of salt per diem as part of his ration. The horse receives very little salt in his food, especially in corn, and as a consequence, has to be satisfied with what is saved from his bran mash. If man, an omnivorous animal, weighing 145 pounds, requires as much as half an ounce of salt per day, even though the taste for it may to a considerable extent be acquired, surely the horse, an herbivorous animal, weighing 1,000 pounds, and partaking daily of ten to twelve times as much food as the former, requires at least twice as much salt; as an actual fact, he is furnished with less (a little over three ounces a week). As an experiment place the month's allowance of salt for a horse in a tight box where he can have constant access to the same. It will be found that it will not last over nine days. Of course there will be many exceptions. Salt should be supplied in the form known as *rock* (at least three-fourths of it), and it should be hung in convenient places in the corral, protected from the rain, where the animals could reach it whenever they felt so disposed, the loose

salt to be used in compounding the mash. There are troops of cavalry in the service who, knowing the supply of salt is insufficient, make it a point to secure the brine from the bottoms of pork barrels for their horses.

The watering of animals in the service appears to be a matter of convenience and routine, something that must be attended to a certain number of times during the day without any regard to its effect upon the animal economy. The Drill Regulations say that the horses shall be watered at morning and evening stables, and in cold weather water once a day is sufficient. There is nothing very definite about this. It does not say whether the water shall be given before or after feeding. So to strike a happy medium and at the same time relieve themselves of considerable trouble, the different regiments water after feeding in the morning and before feeding in the evening, and if you should ask why "this is thus" you will be given—in the language of the street—a stand off, for the wrong way of doing a thing is in the majority of cases the easier one, and few of us are ready to admit that we are wrong; or perhaps you will be informed it is the "custom of the service," and this latter legend smooths over all the rough places and is generally final.

From a few hints received from observations made at post mortem examinations, the writer instituted a series of experiments with reference to the feeding and watering of horses, with the following results: In the autumn of 1889, a bay gelding (sixteen hands and one inch high, ten years old, teeth in good condition), suffering from farcy, was given seven pounds of good oats at 1:30 P. M., followed by three gallons of cold water at 1:55 P. M. The animal was then walked about 500 yards and shot dead by a bullet wound through the heart, death taking place at 2:20 P. M. On opening the stomach it was found to be healthy in appearance, containing very little water, a small quantity of well masticated hay, and very little oats, so small a quantity of the latter indeed, that it weighed only a little over two and one-half pounds in its wet state. Digestion in the stomach had barely commenced, as far as the oats were concerned. Upon exploration of the small intestines it was found that they contained the major portion of the feed given at 1:30 P. M., well masticated but showing very little indication of the digestive process. Deduction: At least four pounds of masticated oats had been washed into the small intestines by at least two gallons of water before it had been acted upon by the gastric secretions. Granting that at most two pounds of the oats contained in the small intestines would be digested there—although imperfectly—the remaining two pounds

would be thrown off without any benefit being derived from its nutritive properties, while, at the same time, it acted in part as an irritant to the digestive tract.

During the winter of 1889-90, a grey gelding 15.3 hands high, eight years old, used for livery purposes, teeth in fair condition, suffering from fractured thigh bone, caused by a kick, was given four gallons of cold water (chill taken off) at noon, followed immediately by a little over five pounds of good oats, (animal in slings for four hours); killed by pistol shot through the heart (in stall) at 12:40 P. M. On post mortem, stomach in healthy condition, contained a small quantity of well masticated hay, very little water, a quantity of fairly well masticated oats (showing a quantity of whole grains), acted upon to a considerable extent by the stomach. The oats when weighed balanced the scales at seven pounds. This large increase in weight was due considerably to its admixture with a portion of the hay contained in the stomach. Small intestines contained a small quantity of hay and about half a pound of masticated oats (latter not weighed). Deduction: Digestion would have gone on to its full extent in the stomach before contents would have been discharged therefrom; very nearly the whole amount of food given would have contributed to the building up of the system.

In April, 1891, six pounds of oats were given to an old black mare, teeth in very poor condition, afflicted with chronic laminitis (founder), and about to be destroyed by the owner as useless, at noon. At 3 P. M. of the same day animal destroyed by severing left jugular and bleeding to death, having, however, at 2:45 P. M., received as much water as she cared to drink. On post mortem, stomach was found to be healthy and contained a very large number of bots; contained about one gallon of water and about one quart of oats in a well digested condition, although several whole grains were observed floating around. The small intestines contained well digested, although poorly masticated, oats, the former in large quantity all along the course of the small intestines.

Several other individual cases might be cited, but without making the bad effects of watering at the wrong time more apparent.

The writer has on several occasions experimented in this line with his own horses and with the horses of the band of his regiment, and with the following results: Food (oats and corn) given to these animals, followed immediately afterwards by as much water as they wish to drink, appeared in large quantities in an undigested condition in their droppings after thirty-six hours. This state of



affairs continued as long as the experiment was kept up, the droppings becoming sour and offensive to the sense of smell in about a week. When the animals were again watered before feeding, or did not receive water for from two to three hours after feeding, their droppings after about three days became natural and possessed of that rich color, and the not unpleasant odor characteristic of the droppings of horses which are well fed, whose digestions are good, and which are in good health.

It has been observed that the horse, like man, never partakes to excess of that which is at his disposal at all times (rum excepted, so far as man is concerned). For this reason, veterinarians invariably allow their patients to have water before them continually during their illness and without reference to feeding hours. It is found that the horse enjoys his meals with greater satisfaction and instead of showing any ill results from having continued access to water, his appetite and digestion appear to improve. This has been found to apply also to horses in perfect health.

Now, instead of feeding our horses at "first call" in the morning, and immediately after feeding turning them loose in the corral (some of them—the slow eaters—are often turned out before they are half through their breakfast), where they have free access to water, which will wash more than half of the feed in an undigested mass into the small intestines, giving rise to colic, rough coat, "hide bound," ragged appearance, dull eyes, unthrifty condition, sour smelling droppings and yellow mucus membranes, productive of sundry mutterings on the part of the troop commander, continual requests for the veterinary surgeon to do something for MALONEY's horse and HIMENSTIMER's horse, and a determined effort on the part of the troop farrier to put the whole blame on MALONEY and HIMENSTIMER, whom he will swear can't ride a horse any better than a wooden man, and "who worries the life out of him whenever he has a pass," which is probably once a week, and instead of chasing them for an hour or so over miles of prairie with a four-line whip by way of exercise, watering them about 4 o'clock in the evening, feeding at 4:30 P. M., and allowing them to stand without water until seven the next morning, (fifteen hours every day, how would you like it yourself even in the cold winter months)? If instead of this a few more dollars were used to put a water trough in each stall, something that could be worked in sections of twelve by means of a lever (like those in the new railroad stock cars), into or out of which the water could be turned at will, having each trough to work independ-

ently, so that a "hot" horse cannot drink when placed in the stall, what a change it would make in the appearance of the horses of a troop and that in a short time; or if the horses were kept in the stable after morning feeding until 9 o'clock, or if the corral water trough was boarded over and the stable men could be depended upon not to open it until 9 A. M., it would undoubtedly have a beneficial effect upon the horse's digestive organs, although these latter plans would entail considerable suffering in summer.

The Drill Regulations say "a horse will rarely drink early in the morning." He will drink early in the morning if he is trained that way.

An officer of the writer's regiment was on a visit east about two years ago and visited the horse show in Madison Square Garden, New York. On his return while "talking horse" in the stable one evening he remarked, "I had the pleasure of seeing horses while I was on leave, but when I came back and looked at these objects (referring to the horses of his troop), it gave me the blues."

Before concluding this part of the article, the writer would ask, Did you ever see a private horse in the service, no matter how bad a horse he might be, looking "like the devil?" He may be a poor, sorry-looking steed, (something like DON QUIXOTE'S charger), while serving in the troop, but no sooner is he purchased at a condemned sale than he begins to improve, even though he may be taken care of by a groom who shows him the brush and comb to-day and tells him he will show it to him again to-morrow, and who depends upon others to water him half the time. Even this horse looks fifty per cent. better than the troop horse, because he is not turned out to the water trough immediately after feeding; because the tail is not run off him by fellows on horseback chasing him; because he is fed oats—even the groom objects to corn, although he may not care a rap for you or your horse; his instinct, we will call it, tells him corn is not the correct horse forage, because the private horses are not exposed to the cold, biting blasts and hard rains, huddled up against the lee of a picket fence or an old stable with the object in view of hardening them for the field. The private horse is kept in the stable where he has a right to remain, where the others could also remain on unpleasant days, were it not that we are afraid of the "dirt and smell" keeping them in gives rise to, which dirt and bad odor would not exist if the stables were properly constructed and properly drained.

The wretched old "screws" we are furnished with for remounts are bad enough, goodness knows, and should not be made more

wretched looking by injudicious management and poor judgment in feeding, exercising and watering. Give your own mount the same treatment that the troop horse receives and what will you have? A veritable, mulish-looking plug, and not the kind of a horse KING RICHARD offered his kingdom for. Why, with the amount of forage fed and the comparatively little hard work performed, our horses should look the very picture of equine health and strength, even if they are "streeters."

*Shoeing.*—This subject it would appear is the rock upon which cavalry and even light artillery men split. It is therefore with reluctance that the writer touches upon it (the rock), although he thinks he has a slight knowledge of the anatomy and physiology of the horse's foot.

Having closely studied the different articles on this subject, (appearing from time to time in magazines and journals), the conclusion is arrived at that there is a considerable amount of "balderdash" and "rot" written with reference to this subject. This is said without disrespect to the author of any article that has appeared in this connection.

The horse-shoe now furnished by the service is a good one; the tools used for placing it upon the hoof are also good. The only objection so far as materials are concerned, is to the nails. They are too large, and the shoe should contain only six nail holes instead of eight. Hundreds of years of practical experience have demonstrated the fact that to enhance the usefulness of the soliped, a protection for the foot is absolutely necessary—something that will prevent its wearing away faster than the horn can be secreted and, at the same time, not interfere with the natural movements of the animal, and until some practical chemist discovers a method by which a quarter of an inch of the wall of the hoof can be so hardened by some cheap, harmless compound easy of application that it will resist wear for four weeks, at least, at a time when the compound could again be applied, shoeing in its present form or something very nearly approaching it will have to continue, and if continued properly will do as little injury to the foot, in fact less, than if the animal were bare-footed.

If horse-shoeing is attended to in a perfunctory manner the results will always be injurious to the feet, productive of side bone, contracted hoof, atrophied frog, ring-bone, speedy cut, splints, spavin, interfering, unnatural gait, and all the rest of the ills that follow in the train of this evil. The so-called "necessary evil" of horse-shoe-

ing lies not in the shoe, but in the manner of preparing the hoof for its reception. There is little use in reciting the way in which this is done in the service. We are all too well acquainted with it. If this one thing could be permanently corrected, the millennium, so far as horse-shoeing is concerned, would have surely arrived, and this millennium, with reference to the service, can be hastened by placing the horse-shoeing where it belongs—in the hands of the veterinary surgeon.

We must refer here to the "periplantar shoe and method of shoeing," introduced by Veterinary Surgeon CHARLIER of Paris, and suggested for adoption in the service by Veterinary Surgeon PICHÉ of the First Cavalry, in the last issue of the JOURNAL: "The principle of this method of shoeing is, physiologically, perfectly correct," and the shoe is the ideal one, although it has a tendency to lessen the knee action, but my esteemed colleague forgot that there are few horse-shoers in the service deserving of the name, and it takes a horse-shoer and a mechanic to apply this shoe. Therefore its adoption is out of the question. There may have been and there still may be a few good shoers in the army, but it will be found that almost without exception, they have been and are hard drinkers; men who have been discharged from shop after shop for this reason, until at length they are forced into the army. The other cobblers and horn-butchers cannot be called horse-shoers. It is an insult to an honorable and dignified trade to call them blacksmiths, as they would scarcely be allowed to pull off old shoes in a well regulated shoeing shop. The men are, with few exceptions, sober and thick-headed, resembling a horse in intelligence, one idea at a time, and this one difficult to efface, especially if it is a wrong one. Still something could be done even with these people if they were taken in time, and before the old horse-shoeing legends of some ill-advised old-timer had been instilled into them.

The veterinarian in the service might as well be a practical and theoretical horse-shoer as a professor of veterinary surgery and medicine, as he is compelled to be, by regulations and by special order, at some posts.

The army veterinary surgeon cannot afford to be an ignoramus upon any subject pertaining to his profession nowadays, although his superior training and knowledge in his especial line will avail him nothing financially, for were he an encyclopædia of veterinary medicine, and included every branch of this science to its full extent, nevertheless the War Department would manage to work it all

out of him at the fixed price of \$75.00 per month, including the rank and allowances of a sergeant-major, and a library of one book, known by the attractive title of "The Farmer's Veterinary Adviser," and it should be added, "Or Every Man His Own Horse Doctor."

Captain FORBUSH of this regiment, with whom the writer discussed some of the subjects of this article, is of the opinion that although the veterinary surgeon is not supposed to be a practical iron worker, still he could take the best horse-shoer in the regiment as his lieutenant, select men with a mechanical turn of mind from the different troops, and through him and with him, give those men such instructions practically and theoretically as would fit them to shoe the horses of the regiment in the manner in which it should be done, each troop in the regiment to send a prospective horse-shoer to headquarters, where he should remain until he is fully competent to perform his duties, when, upon receipt of a certificate of competency from the veterinary surgeon, approved by the colonel or commanding officer, the man could be returned to his troop fully prepared to do his duty in a workmanlike manner, thus doing away with the cutting out of the heels, the paring of the frog, the thinning of the sole, the rasping of the walls, the mutilation of the bars, in fact, the destroying of the hoof. But some one will say this scheme is in practice at Jefferson Barracks, where there is a boss horse-shoer to instruct recruit blacksmiths. Granted, and granted again, that this gentleman knows his business thoroughly, it must be remembered that the number of horses at that depot rarely exceeds eighty, and that the number of recruits under instruction is seldom less than ten. How many horses would one of these men assist in shoeing in a month? Probably six, and after a few months of this sort of thing he is assigned to a troop as a horse-shoer. Well he gets the shoe on; we know how he fits it. After awhile the troop commander finds it necessary to have his private horses shod. He inquires as to the kind of a man he has, and the end of it is he obtains an order from the post quartermaster to have his horse shod by the post blacksmith, or Captain BLANK of troop "J" who has a good horse-shoer allows his man to do it for him.

Captain FORBUSH, while on duty at Jefferson Barracks, made a report on a scheme to improve the horse-shoers in the army, but up to date the report has not had any effect upon the old system. Such is horse-shoeing in the service, and the writer is in full accord with Captain FORBUSH in the above scheme for rectifying it.

The horse in the service has too few champions. The great effort so far as he is concerned seems to be directed towards biting,

saddling, gaiting, shoeing and unshoeing him. Not a word about his welfare and sanitary surroundings. He is deserving of better consideration. He is our first weapon and our last refuge; our constant friend and our much abused companion; a source of exquisite pleasure and keen enjoyment; a great factor in warfare and a prominent agriculturist in times of peace, possessing

“Many a good

And useful quality, and virtue too —  
Faithfulness that never can be changed  
By any change of fortune; proof alike  
Against unkindness, forgetfulness, and neglect;  
Dependence on us, lasting as the life,  
And glistening even in the dying eye.”

## PROFESSIONAL NOTES.

ROUTES OF THE EXPEDITIONS\* MADE BY THE CAVALRY  
—INCLUDING THE BATTLES AND ENGAGEMENTS  
FOUGHT IN THESE AND OTHER OPERATIONS NAMED,  
UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN,  
FROM THE OPENING OF THE WILDERNESS  
CAMPAIGN, MAY 4, 1864, TO THE SURRENDER OF THE  
REBEL ARMY, UNDER GENERAL JOSEPH E. JOHNSTON,  
APRIL 26, 1865.

### THE WILDERNESS CAMPAIGN.

In the Wilderness Campaign the Cavalry Corps, Army of the Potomac, consisting of three divisions and numbering about 10,000 effective men—the advance of the army—started from the vicinity of Culpeper C. H., Va., on May 4, 1864, crossed the Rapidan and moved to Chancellorsville on the 4th and 5th, and from May 5th to 8th, the following battles and engagements were fought: Parker's Store, Craig's Meeting House and Todd's Tavern, May 5th; the Furnaces, May 6th; Todd's Tavern (second), May 7th; and Spottsylvania C. H., May 8th.

### FIRST EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

From Todd's Tavern, starting May 9, 1864, via Chilesburg, Anderson's Ford, Beaver Dam, Ground Squirrel Bridge, Yellow Tavern, Richmond, Meadow Bridges, Mechanicsville, Bottom's and White Oak Bridges and Malvern Hill to Haxall's Landing, arriving May 14, 1864, with the following battles and engagements: Beaver Dam, May 9th and 10th; Yellow Tavern, May 11th; Meadow Bridges or Richmond, May 12th.

RETURNING MAY 17, 1864.

Via St. Mary's Church, Jones's Bridge, Baltimore Cross Roads, Whitehouse, Lanesville, King William C. H., Aylett's and Reedy

\*"These expeditions are frequently referred to in reports and dispatches as "raids," whereas as the series of operations included, the strength of forces employed, the duration and extent of the marches, and the many important battles and engagements fought in their course, define them to be expeditions embracing great results."



Swamp to Polecat Station, arriving May 25, 1864. Rejoining the army at this point and preceding its advance via Chesterfield Station, Mangohick Church and Hanover Town to Newcastle, arriving May 29, 1864, with the following battles and engagements: Hanover Junction, May 27th; Hawe's Shop, May 28th.

#### BATTLES AROUND COLD HARBOR, (OR COOL ARBOR.)

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

The First and Second Cavalry Divisions, estimated effective strength, 5,500.

Operated in the vicinity of Cold Harbor from May 30th to June 2, 1864, and the following battles and engagements were fought: Matadequin Creek, May 30th; Cold Harbor, May 31st and June 1st; Sumner's Upper Bridge, June 2d.

The Third Cavalry Division, Brigadier-General J. H. WILSON, commanding, operated from May 26th to June 15, 1864, from Ashland Station to St. Mary's Church, near the Chickahominy, and the following battles and engagements were fought: Mechump's Creek, May 31st; Ashland Station, June 1st; Hawe's Shop No. 2, June 2d; Tolopotomy, June 2d; Bethesda Church, June 11th; Long's Bridge, June 12th; White Oak Swamp, June 13th; Riddel's Shop, June 13th; Smith's Store near St. Mary's Church, June 15th.

#### SECOND EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

The First and Second Cavalry Divisions; about 5,000 effective.

From New Castle, starting June 7, 1864, via Aylett's, Reedy Swamp, Polecat Station, Chilesburg, Brock's Bridge and Miner's Bridge, to Trevillian Station, arriving June 11, 1864, with the battle of Trevillian Station, June 11, 1864.

#### RETURNING JUNE 12, 1864.

Via Carpenter's Ford, Shady Grove Church, Spottsylvania Court House, Bowling Green, Newtown, Clarksville, King and Queen Court House, and back to Clarksville, thence via Dunkirk, King William Court House, Lanesville, White House, Tunstall's Station, Baltimore Cross Roads, Jones's Bridge, Charles City Court House, crossing the James River at two points—Prince George Court House, Lee's Mill, and back through Prince George Court House to Light House Point, arriving June 28, 1864, with the following battles and engagements: Mallory's Ford Cross Roads, June 12th; Tunstall's Station, June 21st; St. Mary's Church, June 24th.

June 29th, the command moved to the support of General WILSON at Ream's Station, starting from Windmill Point via Prince George C. H., and Lee's Mill to Ream's Station, returning to Light House Point July 2, 1864.

#### THIRD EXPEDITION.

(UNDER COMMAND OF BRIGADIER-GENERAL JAMES H. WILSON.)

The Third Cavalry Division, estimated 2,500 effective, and General KAUTZ's Cavalry Division from June 25th.

From Lee's Mills, starting June 22, 1864, via Ream's Station, Dinwiddie Court House, Mt. Level, Blacks and Whites, to Nottoway

Court House, thence diverging into two columns, the right preceding via Burke's Station, the left via Hungry Town to Meherin Station; from Meherin the entire column moved via Keysville to Roanoke Station, arriving June 25, 1864, with the following engagements: Stony Creek, June 28th; Ream's Station, June 29th.

#### MINE EXPLOSION AT PETERSBURG.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

The First and Second Divisions of Cavalry, strength about 5,000 effectives; General KAUTZ'S Cavalry Division.

From July 26th to July 30th, the cavalry named coöperated with the Second Army Corps, in the movement made in connection with the mine explosion at Petersburg,—as shown in the route laid down from Light House Point via Broadway, Bermuda Hundred, and Deep Bottom to Darbytown, and back through Deep Bottom, Bermuda Hundred, and Broadway to Lee's Mills, with the battle of Darbytown, July 28th, and engagement at Lee's Mills, July 30th.

#### SHENANDOAH VALLEY CAMPAIGN.

(FROM AUGUST 6TH, TO NOVEMBER 28, 1864.)

The Cavalry of the Army of the Shenandoah composed of three Divisions; strength, 8,932 effective.

Operated in the Shenandoah Valley campaign with the following battles and engagements: Moorefield, August 7th; Toll Gate, August 11th; Cedarville, August 16th; Winchester, August 17th; Summit Point, August 21st; Kearneysville, August 25th; Kabletown, August 26th; Smithfield, August 28th; Smithfield Crossing of the Opequan, August 29th; Bunker Hill, September 2d and 3d; Abraham's Creek, September 13th; Opequan, September 19th, (infantry also engaged); Front Royal, September 21st; Fisher's Hill, September 22d, (infantry also engaged); Milford, September 22d; Luray, September 24th; Forest Hill, September 24th; Weyer's Cave, September 26th; Brown's Gap, September 26th; Waynesboro, September 28th; Mount Crawford, October 2d; Tom's Brook, October 9th; Cedar Creek, October 19th, (infantry also engaged); Milford No. 2, October 26th; Middletown, November 12th; Nineveh, November 12th.

#### FOURTH EXPEDITION.

(UNDER COMMAND OF BREVET MAJOR-GENERAL W. MERRITT.)

First Cavalry Division.

From Winchester, starting November 28, 1864, via Ashby's Gap, and Middleburg to Fairfax, Centerville, and other points in Loudon Valley.

#### RETURNING.

Via Goose Creek, Snicker's Gap and Berryville, to Winchester, arriving December 3, 1864.

#### FIFTH EXPEDITION.

(UNDER COMMAND OF BREVET MAJOR-GENERAL A. T. A. TORBERT.)

The First and Second Divisions of Cavalry, Army of the Shenandoah; effective strength about 4,000.

Moved from Winchester, starting December 19, 1864, via Stony Point, Front Royal, Chester Gap, Sperryville and Madison Court

House, to a point near Gordonville, arriving December 23, 1864, and the following battles and engagements were fought: Liberty Mills, December 22d, and Gordonsville, December 23d.

#### RETURNING DECEMBER 23, 1864.

Via Madison Court House and Culpeper Court House, to Warrenton, from thence diverging into two columns, the one proceeding via Salem, the other via White Plains and Middleburg, concentrating at Paris, and from thence proceeding via Ashby's Gap to Winchester, arriving December 28, 1864.

December 19, 1864, the Third Cavalry Division (CUSTER'S) moved up to the Valley making a diversion in favor of Torbert, and the following engagement was fought: Lacey's Springs, near Harrisonburg, December 21st.

#### SIXTH EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

The First and Third Cavalry Divisions, Army of the Shenandoah; total effective, 9,987; Major-General W. MERRITT, Chief of Cavalry, in immediate command.

From Winchester, starting February 27, 1865, via Newtown, Strasburg, Woodstock, Edinburg, Newmarket, Harrisonburg and Staunton, to Charlottesville, diverging at this point into two columns, the left proceeding via Scottsville and Howardsville, the right via South Garden and Lovingsston to Newmarket, a brigade only preceding to the bridge at Duguidsville. From Newmarket the entire command moved via Scottsville to Columbia—one brigade being sent to Goochland via Pemberton Dam, returning to Columbia via Fifes. From Columbia diverging into two columns, the right moving via Fifes and over South Anna River, the left via Nancyville and Tollersville, to Frederick's Hall Station; thence diverging into two columns, the right moving via Jackson, Ground Squirrel Bridge and Ashland, the left down the railroad via Beaver Dam and Hanover Junction, joining forces at the railroad crossing of the South Anna River, from thence in parallel columns via Hanover Junction to Mount Carmel Church, thence in one column via Chesterfield Station, Mangohick Church, King William C. H., Lanesville White House, Baltimore Cross Roads, Jones's Bridge, Charles City C. H., Haxall's Landing, Deep Bottom and Bermuda Hundred, to Newmarket, in front of Petersburg, arriving March 27, 1865, where the expedition ended.

The following battles and engagements were fought during the expedition: Waynesboro No. 2, March 2d; and North Anna Bridges or Ashland No. 2, March 14th and 15th.

#### SEVENTH EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

##### CAVALRY OPERATIONS APPOMATTOX CAMPAIGN.

First and Third Cavalry Divisions, Army of the Shenandoah, Major-General MERRITT, commanding, 5,700; Second Cavalry Division, Army of the Potomac, Major-General GEORGE CROOK, commanding, 3,300; General MACKENZIE'S division of cavalry, Army of the James, joined the morning of April 1st, 619; total effective force, 9,619.

From Newmarket, starting March 29, 1865, via Ream's Station and Dinwiddie Court House, to Five Forks, moving from thence in two columns, the one crossing the Southside Railroad at Ford's Sta-

tion, the other near Wilson's Station, joining again at Scott's Corners; again diverging into two columns at Long Bridge on Winticomack Creek, one moving via Mannsboro, Beaver Pond Creek and West Creek, to Jetersville, the other crossing West Creek to Burke's Station, and from thence in a northeasterly direction along the Danville Railroad, joining the balance of the forces at Jetersville. From Jetersville one division moved across the country to Paineville, returning to Jetersville via Amelia Springs.

On the 6th of April, the entire command moved forward, fighting; to Sailor Creek, thence moving in two columns, one via Farmville and thence along the railroad to Prospect Station, where it was joined by the other which moved via Prince Edward C. H.; from Prospect Station, advancing in two columns, the one along the Lynchburg Railroad, the other north of the railroad, joining at a point near Appomattox Court House.

On the 9th of April, the command advanced, fighting, to Appomattox C. H.

The following battles and engagements were fought during the expedition: Dinwiddie Court House, March 31st, (MERRITT's and CROOK's cavalry); Five Forks, April 1st, (MERRITT's and MACKENZIE's cavalry);—infantry also engaged; Scott's Corners, April 2d, (MERRITT's and MACKENZIE's cavalry); Sweethouse Creek, April 3d, (CUSTER's division of MERRITT's cavalry); Winticomack Creek, April 3d, (WELL's brigade of MERRITT's cavalry); Amelia Court House, April 4th and 5th, (MACKENZIE's cavalry); Tabernacle Church, April 4th, (MERRITT's cavalry); Amelia Springs, April 5th, (CROOK's cavalry); Sailor's Creek, April 6th, (MERRITT's cavalry);—infantry also engaged; Farmville, April 7th, (CROOK's cavalry); Appomattox Station, April 8, (MERRITT's cavalry); Appomattox Court House, April 9th, (MERRITT's, CROOK's and MACKENZIE's cavalry).

#### RETURNING APRIL 10, 1865.

Via Prospect Station, Prince Edward Court House, and Burke's Station to Nottoway Court House, remaining at this point three days, and then proceeding, on the line of the Southside Railroad to Petersburg, arriving April 18, 1865.

#### EIGHTH EXPEDITION.

(UNDER COMMAND OF MAJOR-GENERAL P. H. SHERIDAN.)

First and Third Cavalry Divisions, Major-General MERRITT commanding; Second Cavalry Division, Major-General GEORGE CROOK commanding; the Sixth Army Corps (infantry), Major-General H. G. WRIGHT commanding.

The cavalry starting from Petersburg, April 24, 1865, via Dinwiddie Court House, Burchetts Bridge, Boydton, and Abbeville, to South Boston, arriving April 28, 1865.

The infantry starting from Burkesville (Burke's Station), and moving to Danville.

#### THE CAVALRY RETURNING APRIL 29, 1865.

Via Wiliesburg, thence diverging into two columns, the one moving via Lewiston, the other via Hungry Town, to a point near Black and Whites, and from thence in one column, on the line of the railroad to Petersburg, arriving May 3, 1865.

## THE UNITED STATES INFANTRY SOCIETY.

Under the foregoing title, there was organized at Fort Leavenworth, Kan., on April 19, 1893, an association which has long been desired by many who claim to have the best professional interests of the infantry at heart.

It has started with quite a large membership, over 200, and this will undoubtedly be increased until it embraces nearly, if not quite all, the infantry officers of our army, and many of the other arms also.

If conducted on the principles enunciated in the constitution, it will surely be a great and lasting benefit to the regular army, the National Guard and militia of the United States.

What those principles are may be fairly well understood by referring to an extract from the report of the committee on constitution, in which Captain FORNANCE, who submitted the report, said: "Owing to the continually progressive nature of the art of war, due to various changes in the progress of scientific discovery, there are elements in it different from the war of the past; as these elements are introduced, the more completely does the past cease to be an adequate standard for determining the preparation of armies for war, the more must we depend on a careful study of the conditions of the present applied to the collated experiences of past war, in which the conditions are most nearly analogous to those we shall have to face, and as that army will be in the better state of readiness which has the most carefully prepared itself for the conditions of modern war, and as the 'infantry is the mainstay and the backbone of all armies—on the infantry the brunt of the fighting falls; it suffers more in action and more on the line of march,' and as 'infantry on the battle-field, whether it gains or yields ground, irresistibly draws the other arms with it in advance or retreat,'—we deem it advisable to suggest the formation of a society of infantry officers of the military forces of the United States, for the purpose of professional improvement, unity of purpose, and the discussion of such questions as may be deemed proper for the legitimate advancement or improvement of the infantry arm of the service by means of publications, discussions, and mutual suggestions relative thereto. We therefore submit the following plan for a constitution."

From the address of the Executive Council we take the following, as further showing the reasons for the existence of our Infantry Society: "Of the object of the society and its necessity, but little need be said. It is felt by a great many infantry officers that the infantry arm is in danger of falling behind the other branches of the service in *esprit de corps*, and that consequently the professional accomplishments and usefulness of its officers are in danger of also falling below the standard maintained by the officers of the other arms. And it is further believed that the conditions complained of are largely due to the lack of a common center or head, such as the cavalry has in its 'Association,' and the artillery in its Organization at Fort Monroe. It will be the aim and object of the Infantry Society to supply this want. Through it an 'infantry feeling,' and es-

*prêt de corps*, could and should be created and maintained, which would have a beneficial effect in stimulating the ambition of infantry officers, and improving the general standing and professional usefulness of the arm. \* \* \* To officers of the army in general—those not in the infantry—the Executive Council also appeals for encouragement. The society will be conducted on broad principles. While its design is the 'professional improvement, etc.,' of the infantry, yet it will lend its influence to nothing not believed to be for the improvement of the whole army."

We believe we express the sense of the members of the Cavalry Association when we wish the United States Infantry Society the greatest possible measure of success in its new undertaking.

#### MEMORANDUM FOR THE GUIDANCE OF OFFICERS CONDUCTING REVOLVER PRACTICE OF A CAVALRY TROOP.

Owing to the publication of the new Drill Regulations for cavalry (which includes the manual of the pistol), and the publication of General Order No. 143, Adjutant-General's Office, Series of 1890, as well as the various decisions of the War Department on the subject, Part VIII. of Blunt's Firing Regulations for Small Arms, treating of Revolver Firing, has been so thoroughly amended that the following memorandum may be found useful for reference. The present prescribed course in revolver firing for a U. S. cavalry troop, as authorized in Blunt's Manual and modified by the above mentioned authorities, is believed to be as follows:

One month in each year is set apart for the practice, and it may either precede or follow the practice season with the carbine (it usually follows) as the department commander may direct. The subjects for the practice are all the officers and men present for duty with the troop. Revolver firing both mounted and dismounted for recruits may, however, be entirely omitted or only conducted to such an extent as the troop commander may see fit, and recruits who have not practiced will not be included in the annual troop report (Form 30-f) of revolver firing, but officers and all other enlisted men will be so included, and their scores considered in making up the report. (Decision Major-General commanding, May 29, 1889, published in circular Department of California, January 23, 1892.)

The scores of officers must also be included in the annual troop report (Form 30-f) and no amount of firing in previous seasons will excuse an officer from firing, as it will in the case of the rifle or carbine, after the two seasons' course is followed. The targets used are the "A" target (used for dismounted practice) and the "D" and "K" targets (being the figures of men dismounted and mounted *en silhouette*).

The troop is first instructed in the method of handling the revolver *not* loaded, including raising, lowering, returning, loading, (using imaginary cartridges), making ready and firing as prescribed in Cavalry Drill Regulations. Blank cartridges should then be used.



Then further instruction, it is directed, should be given each man by requiring him to fire at a target (like that used for gallery practice at fifty feet), at distances of five and ten yards, a cartridge containing ten grains of powder and a round ball. Then follows the prescribed preliminary firing at the "A" target with the regular service revolver cartridge at the distance of ten, twenty-five and fifty yards, from one to four scores of five shots each being fired at each range, the position being standing, off-hand. Then follows the regular or record practice, consisting of one score of five shots at twenty-five yards, and one score of five shots at fifty yards; ten shots in all. This completes the dismounted practice.

For mounted practice each trooper is required to ride his own horse and, as a preparation for what follows, the troopers are maneuvered by squads in front of the various targets at different gaits; first without and then with blank cartridges, until men and horses become used to the exercise. Then, when men and horses have been sufficiently exercised in this manner, and the trooper can handle his pistol correctly, and the horse becomes accustomed to firing, practice upon the track is begun; the track is elliptical in shape, 200 yards long. The targets are placed on the outside of the track, opposite one of the long sides, the troop is drawn up in line within the track facing the left and front of the targets, if the firing is to be done to the right, or opposite the right and front if the firing is to be to the left. One marker for each target and the scorer take convenient positions within the track.

At first the "D" targets (the silhouette of a man dismounted) are placed, first five and then ten yards from the track; the targets are five in number and twenty yards apart. The troopers are maneuvered in front of them at different gaits, going through the motions of firing. Then the "K" targets (the silhouette of a mounted man) are substituted and the same exercise is repeated. Then the "D" and "K" targets are successively arranged in line of echelon at an angle of forty-five degrees with the track, and the same exercise is repeated. Blank cartridges will then be fired, and the exercise continued until each trooper can fire five cartridges with deliberation and coolness in the time occupied in passing by the target.

During these exercises the interval between troopers is about twenty yards. Ball cartridges are then issued to each man, and the troop is ready for preliminary and regular firing; the amount of preliminary firing is largely discretionary with the troop commander, but it is recommended that each variety of mounted firing be preceded by preliminary instruction. The troopers leave the right of the troop at a walk, each trooper moving out as soon as the preceding trooper has passed the targets and the shot holes have been pasted. In the first exercises with the "D" target, he continues at a walk around the track, but in the subsequent exercises takes up the gallop before reaching the first target and resumes the walk after passing the last target.

Briefly, the record or regular mounted practice consists, (a) with the targets "D" arranged at twenty yards apart, five yards from the



track, one circling of the track at a walk for each trooper, firing five shots. This to be repeated five times, the angle of the targets with the track being changed between each time, so that the firing will be from the right, the right front, the right rear, the left and left front—twenty-five shots; (b) similar to "a," except that the track will be traveled at a gallop—twenty-five shots; (c) similar to "b," except that the target will be ten yards instead of five yards from the track—twenty-five shots; (d) similar to "c," except that target "K" will be used—twenty-five shots; (e) targets "D" are placed in line of echelon at an angle of forty-five degrees with the track. The first at twenty-five yards from the track; the second target, twenty yards; the third target, fifteen yards; the fourth target, ten yards, and the last target five yards from the track. When repeating the firing from the left, the positions of these targets are reversed, one circling of the track at a gallop to the right and one to the left—ten shots; (f) similar to "e," except that target "K" is used—ten shots. Total number of shots fired for record, 120. Each hit on target "D" is recorded as one, both direct and ricochet. On target "K," direct and ricochet hits in that portion of the silhouette above a line drawn from the back of the horse to the points of junction of the trooper's arm and the neck of the horse, are scored two; all other hits are scored one.

One report of revolver firing only is made (Form 30-f), and this at the close of the season, to the Inspector of S. A. P.

JOHN A. LOCKWOOD,  
*First Lieutenant Fourth Cavalry, U. S. Army.*

#### NOTE ON MILITARY GEOGRAPHY OF MEXICO.

The leading article of the present number of the JOURNAL, "The Military Geography of Mexico," by Captain WILLIAM A. SHUNK, Eighth U. S. Cavalry, was delivered in the Department of the Military Art as one of a series of lectures prepared for the instruction of the officers in the U. S. Infantry and Cavalry School, Fort Leavenworth, Kansas.

The map accompanying the paper is perhaps the most correct one in existence of the railway communications of Mexico, having been compiled from the latest obtainable data, and with a special view to accuracy. The skill displayed in drawing the map from which the plate was made, reflects great credit upon Second Lieutenant ERVIN L. PHILLIPS, Sixth U. S. Cavalry.

## BOOK NOTICES AND EXCHANGES.

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THE SERVICE OF SECURITY AND INFORMATION. Captain Arthur L. Wagner, Sixth U. S. Infantry. James J. Chapman, Publisher, Washington, D. C.\* Price, \$1.50.

This book has recently appeared in answer to a general desire on the part of the officers of the army for a book purely American. The author has applied to the general principles, "the touchstone of American practice in war." To accomplish this result, he submitted the manuscript to Generals Ruger and Merritt, Lieutenant-Colonels Hawkins and Henry, and Majors Hasbrouck, Carr and Babcock. These names alone would insure an excellence never before attained by an American work on this subject.

The author has had great pains taken with the typography, for which all that read the work will be grateful. By giving the definition of the common military terms, the necessity for looking them up is obviated.

The reader will be struck by the impartiality with which the author has treated the conflicting opinions in regard to the service of security and information.

Chapter I. is the introduction. In this chapter is shown the necessity for the service of security and information. Examples are given of the danger of a lack of this knowledge. These examples are taken from foreign wars, and also from our own experiences in Mexico and in the War of the Rebellion. After showing the necessity for this service, the author proceeds to describe the method of carrying it out.

Chapter II. is on the subject of advance guard duties. The necessity for the advance guard is shown, and the reasons for subdividing the column into a main body, an advance guard, a rear guard and flanking parties, are given.

The strength of the advance guard is here determined. It is to be noted that the author emphasizes the fact that circumstances must determine the strength of the advance guard, and "as a general rule (subject, however, to a multitude of exceptions), we may

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\*To be had of the Secretary U. S. Infantry and Cavalry School, Fort Leavenworth.

assume the strength of the advance guard to be one-sixth of the whole force," thus arriving at the strength ordinarily to be employed. The strong advance guard sometimes employed by the Germans in the Franco-German War, is deprecated. Good reasons, with examples, are given to support the author's position.

The formation of the advance guard is then described. A plate, illustrating this formation, is given—the author cautioning us not to view such a formation as one always to be used.

The duties of the commanders of the different subdivisions are clearly explained.

The cavalry advance guards are described. The distances between the subdivisions are given as accepted abroad; the author then says: "It would seem, however, that in our service these distances might be safely reduced; for American cavalry, which can make effective use of dismounted fire action, has greater resisting powers than European cavalry, and it is not limited, as the latter seems generally to be, to a charge to the front or a flight to the rear." The formation of an advance guard of all arms is described.

The power of our cavalry renders the presence of infantry in the advance guard less necessary than in foreign armies. The cavalry, with the assistance of horse artillery, would be able to present the necessary resisting power until the infantry could come up. This is fully shown in the text.

The author then takes up the subject of the formation as modified by the terrain. Every officer in the army should constantly bear in mind, "whether on active service or merely at drill, the commander of an advance guard, outpost, or rear guard, must exercise judgment, and make his dispositions in accordance with the nature of the ground and the real or supposed circumstances of warfare under which he is acting."

What is to be done when the enemy is encountered is shown. The duties and formations of the advance guard of a large body of troops are shown. The use of intrenching tools by the advance guard, is shown by the action of Fitzhugh Lee's cavalry on the Brock Road, and by the First Cavalry Division which held the position of Cold Harbor until the arrival of the Sixth Corps. The composition and duties of the flank guards are explained.

A new feature in the shape of an advance guard drill is given; this will be especially valuable to those who are reading the book without previous knowledge of the methods employed.

Chapter III. is on the subject of outpost duty. In this chapter it is to be noticed that examples are given of the disasters that follow the improper posting of the outposts. This method carries more conviction than would pages of description of how an outpost should be posted. It is very interesting to note that Cossack posts are of American origin.

Chapter IV. is on the subject of reconnaissance. This important subject is fully treated; examples are also given of reconnaissances that have been made. To illustrate the method of entering and

reconnoitering a town, a topographical map of the country near Franklin is given, and the proper positions of the subdivisions are shown.

Chapter V. is on the subject of the cavalry screen. This chapter is extremely interesting; it begins with a historical account of the subject, giving illustrations of its use. Its formation and use are clearly described.

Chapter VI. is on the subject of rear guards. The subject is well treated and illustrations are given.

The subject of spies is considered in Appendix I.

Appendix II. is on orientation and map reading. This important subject is briefly treated, but an outline of such a character is given that it makes the work complete; for a more extended treatment of the matter the reader could go to some special work on the subject. Enough is given for all purposes of minor tactics.

Appendix III. gives the method of Indian scouting.

Appendix IV. gives a list of questions on the subject. If an officer finds that he can answer all these questions, he need not fear that he is not well up in the theoretical part of the subject.

A complete index makes the book convenient for reference.

The book is *readable*, and it should be a matter of pride to all officers to have an authorized American work of such excellence on this subject.

GEORGE B. DAVIS,  
*First Lieutenant, Fifth Infantry, U. S. Army.*

THE HAWAIIAN ISLANDS. With Maps and Charts. Military Information Division, War Department, A. G. O., February, 1893.

On account of the great interest aroused by recent events in the Sandwich Islands, the War Department has issued from its Military Information Division, presided over by Major John B. Babcock, Assistant Adjutant-General, U. S. A., for the instruction of army officers and other persons likely to be interested in the subject, a handsome quarto pamphlet containing all the information and statistics obtainable relating to the Hawaiian Islands.

Should it fall to the lot of the U. S. army, or any portion of it, to undertake the invasion or occupation of the land of the Kanakas, the generals charged with the conduct of operations would find in this pamphlet an immense amount of information for their guidance, arranged in convenient form for consultation and use.

The compilation embraces extended information in regard to the physical features of the country, ports of landing, supplies, climate, diseases, railroads, roads, telegraphs, telephonic communications, laws, military forces, characteristics of the inhabitants, industries, etc.

The maps accompanying the report are very large, detailed, and accurate, some of them being reproductions of those in use in the U. S. Navy Department, and others which have been made by order of the Hawaiian Government.

It is to be hoped that the work already so well begun, as shown by this first specimen, may be continued until equally trustworthy reports may be furnished the officers of our Army in regard to every country with which we are liable, at any time, to be brought into conflict, in the extension and protection of our rapidly growing foreign commerce.

The substitution of Hawaiian for Sandwich in the designation of the Islands is to be sincerely regretted, as introducing into our language a word which can be pronounced correctly only with great difficulty by any one except born linguists, and the general use of it by them will savor somewhat of affectation. As to the mass of people who may have to employ the word, they will either mutilate it beyond recognition by eye or ear, be driven to the use of a shocking amount of profanity, or to the substitution for it of some pronounceable English name, as Mark Twain's "Innocents Abroad" did for those Arabic names they encountered in the Holy Land.

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DUTIES OF OUTPOSTS WITH MANUAL OF GUARD DUTY, U. S. ARMY.  
By Lieutenant W. P. Burnham, Sixth U. S. Infantry. Syracuse, N. Y. C. W. Bardeen, publisher. 1893.

In this little volume, well adapted for pocket use, Lieutenant Burnham has combined the entire new manual of guard duty, the duties of outposts, a chapter on flags of truce, and one on signaling.

The compilation has been carefully and accurately made, and, in the hands of the National Guard and the students of colleges having military departments, it will become a very good introduction to the study of the authorized text books on the subjects, other than guard duty, of which it treats.

The chapter on outpost duties is illustrated by numerous diagrams of a very excellent kind and well adapted to their purpose.

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MILITAER-WOCHENBLATT.

No. 19: Austria-Hungary—Allowance of Forage for Cavalry and Artillery Horses. No. 20: France—Remount Depot. No. 21: France—Field Forage for Cavalry. No. 22: Military Schools and Colleges in Switzerland. No. 24: Arming and Equipping of the Field Artillery Soldier. No. 26: Officers of Cavalry, Cossacks and Mounted Artillery at the Obligatory Two-Mile Hurdle Races. No. 31: The Military Resources of Germany During the War of 1870-71. No. 32: The Military Resources of Germany During the War of 1870-71 (continued). France—Laboratory for Analyzing Forage. No. 33: The Military Resources of Germany During the War of 1870-71 (conclusion). Belgium—Remounts. No. 34: New Drill Regulations for Cavalry. No. 35: France—Changes in the Uniform of Infantry Officers. No. 36: United States Army Officers. No. 37: Cavalry Apprentices at Saint Cyr, France. No. 40: Distance Riding of a Division of the Russian Cavalry Officers' School During the School Year of 1891-92. The Souchier Range

Finder. Experiments in Horse-Shoeing During a Winter Field Maneuver. No. 41: Distance Riding of a Division of the Russian Cavalry Officers' School During the School Year 1891-92. No. 43: Number of Troops Killed in the Principal Battles During the Last Century. No. 44: Number of Troops Killed in the Principal Battles During the Last Century (conclusion). No. 47: How Should Cavalry Practice Marches be Conducted? No. 48: France—Extra Horses for Cavalry Lieutenants. No. 52: Belgium—Cavalry Maneuvers. France—Establishment of New Cavalry Regiments. No. 53: The Siberian Railway; Its Agricultural, Political and Strategic Value. No. 54: The Siberian Railway; Its Agricultural, Political and Strategic Value (conclusion).

#### REVUE DU CERCLE MILITAIRE.

No. 11: Winter Tents in Russia. The Rifle of the Future. No. 12: The New Cavalry Barracks at Vincennes (illustrated). Reorganization of the Russian Cavalry School. No. 13: A Flying Machine. No. 14: The Armament of Infantry, According to Professor Hebler. Russian War Preparation, by a German. No. 15: The conquest of the Air, with sketch. The Armament of Infantry. A German's View of Russian Preparations for War. Indian Soldiers in the United States. No. 16: Russian War Preparations (continued). The Conquest of the Air (continued). No. 17: Russian War Preparations, by a German (concluded). The Conquest of the Air, with sketch (concluded). The Armament of Infantry. The Grand Maneuvers in Austria-Hungary this Year. No. 18: Saint Cyr et la "Saint-Cyrienne." Military Maneuvers in South Oranais, (with map). No. 19: The Infantry Cuirass and the Predecessors of the Tailor Dowe. Military Maneuvers in South Oranais, with map (continued). The New German Cavalry Drill Regulations. No. 20: Military Maneuvers in South Oranais, with map (continued). The Armament of Infantry, Hebler. No. 21: The Naval Review in New York. No. 22: Phillips' Flying Machine. Military Maneuvers in South Oranais, with map (concluded). No. 23: The New German Cavalry Drill Regulations. A New Kind of Field Bread. No. 24: The New German Cavalry Drill Regulations (continued). No. 25: The New German Cavalry Drill Regulations (continued).

#### THE UNITED SERVICE. Hamersly & Co. 1893.

April: Reforms Needed in the Paper Work of the Army, by Alfred M. Palmer, First Lieutenant Twenty-fourth U. S. Infantry. The Status of the Non-Commissioned Officer in the U. S. Army. May: A New System of Drill Regulations for Infantry, by Lieutenant-Colonel Wm. H. Powell, Eleventh U. S. Infantry. Army Clothing and Equipage, by Captain Romeyn, U. S. Army. June: Important Practical Necessities in Military Signaling, by John P. Finley First Lieutenant, Ninth U. S. Infantry. July: The New Infantry Drill Regulations on Our Next War, by James S. Pettit, Captain First U. S. Infantry. Addiscombe, the East India Company's Military College.

## JOURNAL OF THE UNITED SERVICE INSTITUTION OF INDIA. 1893.

February: The Curved Sword in the Native Cavalry, by Captain W. D. Thomson, First Bengal Cavalry. March: Infantry Attack Formation. A Tactical Retrospect of the Years 1859 to 1890, with Special Reference to Infantry. April: The Modern Literature of Cavalry Tactics. Notes on Convoy Duty. Military Training and its Value in War, by Captain James Parker, Fourth U. S. Cavalry, (reprinted from Journal Military Service Institution, U. S.). Russia and the Invasion of India. The Question of Cavalry Firing When Mounted, (from the Russian).

## JOURNAL OF THE MILITARY SERVICE INSTITUTION, U. S. 1893.

May: The Evolution of Modern Drill Books, by Captain Maude. The Knapsack and the Army Shoe, by Captain Dougherty. Military Misconceptions and Absurdities, by Captain Chester. The Post Mess, by Captain Foote. Cavalry Drill Regulations, by Lieutenant W. H. Smith. The Flag of Truce, by Captain Carpenter. Apprentice Schools for the Army, by Captain Howard. Military Uses of Photography, by Lieutenant Williams. Target Practice, by Lieutenant Brett.

## PROCEEDINGS OF THE ROYAL ARTILLERY INSTITUTION. 1893.

March: Volunteer Adjutancies. A Visit to the Stockholm Artillery Museum. Making or Breaking? April: The Strategical Geography of Europe, by T. M. Maguire, Esq., L.L.D. Breeching for Wagon Horses. Notes on Optical Instruments. The Value of a High Site for Coast Artillery. May: The Effect of the Rotation of the Earth on the Motion of Projectiles. Battery Trussing. Modern Gunpowder and Cordite.

## THE ARMY MAGAZINE. Chicago, Illinois. May, 1893.

The United States Army. Military History of Colonel Edward M. Heyl, Inspector-General, U. S. Army, with full page photo-gravure portrait. The National Guard, with full page photo-gravure portrait of Colonel William S. Brackett, Inspector-General Illinois National Guard, President National Guard Association of Illinois. The Grand Army of the Republic. The Loyal Legion. Columbian Guards, etc.

## JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION. 1893.

March: Electric Balloon Signaling. The Different Systems of Signaling in the Field. April: A Scheme for Establishing a Royal Army Society for each County and Great City, in Order to Improve the Status of the British Soldier on His Return to Civil Life. French Small-Arm Smokeless Powder. May: Our Swordsmanship, by Captain A. Hutton, late King's Dragoon Guards.



**JOURNAL OF THE UNITED STATES ARTILLERY.** April, 1893.

Theoretical Discussion of the Brown Wire Segmental System of Wire Gun Construction, by First Lieutenant Garland N. Whistler, Fifth U. S. Artillery. Field Artillery Draft, by First Lieutenant A. D. Schenck, Second U. S. Artillery. The Artillery Fire Game [Rohm], continued, translated by First Lieutenant John P. Wisser, First U. S. Artillery.

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**THE FIRST MAINE BUGLE.** April, 1893.

Prison Life and Escape, by Captain Andrew M. Benson. A Cavalry Reminiscence, by Lieutenant Horatio C. Libbey. The Country for Which You Fought, by Lieutenant Edward P. Tobie. A Twenty-eight Hundred Mile Bicycle Ride, by Jonathan P. Cilley, jr. Incidents of Appomattox, by General Charles H. Smith.

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**OUTING.** 1893.

April: Long Distance Riding, by Captain Henry Romeyn, Fifth U. S. Infantry. The South Dakota National Guard, by Captain Peter Leary, Jr., U. S. Army (illustrated). May: The South Dakota National Guard (concluded). June: An Apache Dance. Canadian Militia in Action, Part I., (illustrated).

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**PROCEEDINGS OF THE UNITED STATES NAVAL INSTITUTE.** Vol. XIX, No. 1.

Automobile Torpedoes. Notes on the Literature of Explosives. Naval Signaling Discussions.

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**THE IOWA HISTORICAL RECORD.** April, 1893.

The Cardiff Giant Deception. Indian Treaties. A Bundle of Errors.

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**THE WESTERN SOLDIER.** San Francisco, Cal., 1893. April, May and June.**THE NORTHWESTERN GUARDSMAN.** Portland, Oregon, 1893.**THE PACIFIC MILITANT.** Weekly. San Francisco, Cal.**THE RIDER AND DRIVER.** Weekly. New York.